Eye, Ear, Nose, and Throat Supplement

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THE EYE, EAR, NOSE, AND THROAT SUPPLEMENT

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THE 1950 CONVENTION

The 1950 convention of the Osteopathic College of Ophthalmology and Otorhinolaryngology will be held from October 30 to November 4 at the Ambassador Hotel in Los Angeles. Dr. Edward Davidson, program chairman, and Dr. Charles A. Blind, head of the Research Committee, have planned and organized, with the help of their committeemen, an outstanding and constructive educational program to benefit all who find it possible to attend the meeting.

The committees, after careful consideration and discussion, have not only chosen outstanding subjects, but have selected the most capable men in specialized fields to present these papers and discussions. They have concentrated on fewer subjects and feel that adequate time can be allotted to each paper to bring listeners information which acquiring individually would entail years of study and research. Following each paper, time has been arranged for a group discussion of the material read. Attendance at these sessions will constitute a postgraduate course of study.

The Basic Science Courses developed by Dr. John Geiger, assisted by Dr. Frank Paul and Dr. Clarence Mayberry, have been received by members of the College with great enthusiasm. The Basic Science Courses cover all the branches of science related to our specialties. The standards of these courses are extremely high and their presentation should be recognized as a tremendous step forward in osteopathic education. Our College is particularly pleased and proud of this development and progress.

I should like at this point to urge College members to prepare for examination by the Osteopathic Board of Ophthalmology and Otorhinolaryngology for certification as specialists. And not only are certified members desired but also new members. Our progress and strength depend on new members.

The splendid program planned, the effort extended to provide the very best accommodations for all members, the pleasant atmosphere of relaxation in Sunny California, and the good fellowship which is definitely a part of our group, insure a superb convention. We extend a very cordial invitation to all physicians interested in this specialty.

Meet us in Los Angeles for an outstanding convention.

RALPH S. LICKLIDER, D.O.
President

AN INVITATION TO CALIFORNIA

New departures in several respects will mark the 1950 meeting of the Osteopathic College of Ophthalmology and Otorhinolaryngology. The setting of this first meeting on the Pacific Coast will be the beautiful, modern Ambassador Hotel. The spacious grounds and freedom from downtown congestion will be conducive to pleasure as well as to attention to convention business.

Top-notch speakers from within and without the College are being engaged to produce a program at the graduate education level. There will be a section

devoted to the diagnosis, surgical treatment, and plastic repairs of malignancies of the eyes, ears, nose, and throat, arranged by the Cancer Commission of the California Osteopathic Association in cooperation with the Chronic Disease Service of the State of California Department of Public Health.

There are thirty-five members of the Osteopathic Academy of Ophthalmology and Otorhinolaryngology in Southern California, so there is ample manpower for committees to look after convention needs. Women's entertainment will be selected from numerous Pacific Coast attractions. Among the places to be visited are the Orange Empire, the Huntington Library, movie studios, radio broadcasting stations, and the historic LaBrea pits.

Board meetings and examinations for certification will be held October 30 and 31. Convention dates are November 1, 2, and 3. Now is the time to make hotel reservations with Dr. Preston J. Stack, 4476 Crenshaw Blvd., Los Angeles.

EDWARD W. DAVIDSON, D.O.
Program Chairman

General Considerations of Allergy in Ophthalmology

BJARNE HEIAN, D.O.
Detroit

The close relationship and interreactions of allergies with other biologic phenomena make any discussion of what allergy really is a very difficult subject to present in a simple, direct, and concise manner. Consequently, any discussion of ocular allergy requires for its basic comprehension an understanding of the vague and fragmentary knowledge of the way in which the eye participates in the intricate general immune-reaction complex.

If a foreign substance is injected into the blood stream of an animal, a number of different things may happen. First, if the substance is diffusible it may be absorbed by cells for nourishment or broken down into smaller simpler molecules and eliminated. Second, it may cause the production of antibodies which combine with it and render it inactive. This is part of the general immune-reaction complex.

Among the several types of antibodies created by such a foreign substance (or antigen) are:

1. Immune bodies (also known as bacteriolysins) which result in the destruction of the antigen by lysis (or dissolution)
2. Opsonins which sensitize bacterial antigens allowing phagocytic cells to engulf them
3. Agglutinins which cause a clumping or massing of bacteria
4. Antitoxins which neutralize poisons or toxins given off by bacteria
5. Precipitins which cause a precipitation of soluble foreign protein
6. Ferments which resemble immune bodies in that they are closely absorbed with proteins
7. Fatty substances which are found in the intraocular fluid.

Nothing, however, is known about fatty substances except that in pathological conditions large quantities of lipins may appear, their origin is an end product of tissue degeneration due to exudations, and they are brought into the chambers of the eye by the leukocytes. The last two known foreign substances are of lesser importance in the general immune-reaction complex.

In combating disease the body's ability to create these antibodies is utilized in various ways. The injection of vaccine stimulates the production of immune bodies (bacteriolysins and hemolysins) which bring about the dissolution of bacteria. An increase in opsonins facilitates the destruction of bacteria by phagocytosis. During many acute infections, increased quantities of antitoxins are required to neutralize the toxins produced by bacteria. This immune reaction, or sensitization of the antigen, is not entirely specific for each foreign substance injected. Different antigens may bring the reaction into play to different extents.

Thus, as the immune reaction is comprehended, it appears to be the antibodies which sensitize the antigen or foreign substance in such a way that other normal cellular constituents of the body (such as leukocytes and mononuclear cells) are able to destroy them in an exaggerated manner. This conception of the immune reaction links it with our ideas of allergy.

Immunity, which can be natural or acquired, is the resistance to infection. The immune reaction which is present in every normal individual enables him to deal with an infection before it develops. The immune reaction may be impaired in some individuals and may break down with a lowering of tissue resistance. An individual may acquire an active immunity by manufacturing his own antibodies, either by a previous natural infection or by the injection of vaccines. Or a person may be provided with passive immunity by the injection of serum of another individual having appropriate antibodies.

In species immunity, an animal is immune to a particular disease because its cells possess no affinity for the disease organism. Local immunity may be produced in a tissue without the antibodies appearing in the general circulation.

The tissues of the eye share in the general mechanism of immunity, especially the uveal tract and cornea, although to a lesser extent than other tissues of the body. Antibodies (with the exception of precipitins) are found in the aqueous of actively immunized animals. They are found to a lesser extent in the vitreous.

On the other hand, active immunization of the body can be obtained (but only with extreme difficulty) by repeated injections of antigen into the cornea. By this means, specific antibodies can be formed in the cornea and from there diffuse into other parts of the eye and, eventually, to the rest of the body. However, it has been found experimentally impossible to produce

a local immunity of the eye to a subsequent bacterial infection by the injection of bacterial vaccines locally in the eye.

In the mechanism of immunity it is theoretically presumed that where an antibody and antigen react or unite in the cell, some histamine-like substance is liberated which injures the cell and may produce either a general musculospasmodic reaction (anaphylaxis) or a local necrotizing inflammation (allergic inflammation). After this hypersensitive reaction subsides and the antibodies have disappeared from circulation, certain antibodies remain associated with the tissue cells for an indefinite time and produce a *changed capacity to react to the foreign substance.* Subsequently, if contact is made with the same antigen, an intense inflammatory reaction will occur.

Thus both immunity and allergy may be produced by the same antigen. In the normal individual the immune reaction takes place without the development of allergy. In the hypersensitive individual, allergy develops with the immunity. Many of the severe ocular inflammations sometimes ascribed to bacteria are probably allergic responses to bacterial protein. This allergy may develop following a bacterial infection in which the processes of immunity either exterminate or attenuate the bacteria so that clinically the patient recovers. Later he may be reinfected with the same bacteria. If his immune reaction is normal, the inflammation subsides, and he is again clinically cured. But if he has become hypersensitive to the proteins liberated in the destruction of the bacteria, a violent allergic inflammation occurs.

The tissues of the eye can be sensitized locally or as a part of a general sensitization and they are capable of intense allergic reactions. The conjunctivitis of hay fever is an example of an allergic reaction due to contact of the sensitized conjunctiva with a specific allergen. Allergic conjunctivitis may also be observed in patients who are hypersensitive to feathers, molds, dust, et cetera. Vernal conjunctivitis is regarded by many as an allergic reaction.

Treatment of this condition involves a determination of the specific allergen followed by desensitizing injections or the use of antihistaminic drugs. Reduction of the histamine content of the blood often brings relief in itself. Collyria which contain vasoconstrictors such as epinephrine or ephedrine reduce the flow of blood locally by constricting the vascular bed and thereby reduce quantitatively the reaction between the tissue cells and the allergen. Collyria also have a beneficial effect in mechanically washing some of the allergen.

Regardless of its source, the action of histamine is quite marked. It constricts the smaller arteries and capillaries at first and later causes an intense dilation of the capillaries and a marked transudation of fluid leading to chemosis or edema in other tissues. If the capillaries lack tone and are already dilated, histamine fails to produce further dilation and the constrictor effect is noted in the arterioles alone.

In 1910 research workers noted the close resemblance between anaphylactic shock and histamine reactions. Earlier experiments were conducted on guinea pigs and later a similar substance was noted in human beings with allergic reactions. Since this discovery concentrated efforts have been made to find a nonspecific substance that will counteract all anaphylactic and allergic reactions, regardless of what the antigen might be.

Thus it has long been known that histamine liberated in tissues is an important factor in allergy, but only recently have drugs been introduced clinically to counteract histamine, anaphylactic reactions and shock. The developing use of antihistaminic drugs rivals in importance the discovery of epinephrine or adrenalin in 1901.

When allergens come in contact with the mucosa of the eyes, nose, and bronchial tubes, antibodies are produced to combat them. In this process, histamines are released at the site of invasion or contact, and local symptoms consisting of redness, itching, and excessive tearing are noted when the conjunctiva is affected. When the nasal mucosa is involved, sneezing, coughing, difficulty in breathing through the nose, and a persistent watery discharge are present. When the bronchial mucosa is involved, coughing and asthmatic attacks are common. The logical course of action would seem to be the removal of the offending allergen, but unfortunately this is not always possible.

The remaining alternative in treatment of allergic and histaminic reactions consists of finding substances capable of inhibiting anaphylaxis, but until recently most of these substances were either too toxic or too disagreeable to use. However, since 1942 American and European research workers have been developing newer and more efficient drugs with a greater degree of success. These new preparations have been more effective and are much less toxic. The various preparations used are very similar in synthetic chemical composition and yet one seems to work well on one individual, while another has a better effect on a similar condition in another patient. Their exact action is still unknown and research workers feel that the drug in some way competes with histamine at its site of liberation. Another group contends that antihistaminic drugs displace the allergen. This would account for the antagonism to such drugs as acetylcholine and the sulfonamide group of drugs.

In the treatment of ocular conditions, the greatest use of antihistaminic drugs is found in cases of allergic conjunctivitis and those due to reactions from the use of penicillin and the sulfonamides. While these new drugs are not curative, symptoms are relieved until the offending allergen can be removed.

Drug reactions resulting from taking antihistaminic drugs are rare and no permanent damage has been reported following their use. Some patients who take these drugs complain of slight drowsiness, nausea, headache, fatigue, and dizziness but most of these reactions are found in patients taking very large doses. When the dosage is decreased, the drug is still effective and the reactions less severe. All in all, these antihistaminic drugs are found to be of increasing usefulness, and as continued progress is made, results should continue to improve.

In certain individuals for whom the allergen is mold dust, as often occurs in hot humid climates, a change in environment brings quick relief.

Certain drugs, when brought together with the serum of certain individuals, produce substances which act as a foreign sensitizing protein. Severe allergic reactions have been noted with atropine, Butyn, Pontocaine, eserine, pilocarpine, Dionin, and even boric acid. The list of such substances is practically unlimited.

It has been noted previously that the tissues of the eye may be sensitized locally or as part of a general sensitization. Examples of this are sometimes seen in conjunction with the therapeutic use of the sulfonamides. Reactions have been noted in the retina, consisting of exudates and petechial hemorrhages. The development of 2 to 4 degrees of myopia has been observed on a number of occasions during sulfonamide therapy. The myopia is due to a swelling of the crystalline lens nucleus.

In one case of my own, following Barraquer's intracapsular cataract operation, there was an intense generalized skin eruption characterized by itching and later exfoliation. At the same time there was an intense anterior uveitis and keratitis in which the anterior chamber became a third filled with whitish exudate. When the sulfa drug was withdrawn and calcium and epinephrine therapy instituted, the intense allergic reaction subsided and the patient eventually obtained a corrected visual acuity of 20/25.

During the war a number of reactions to Atabrine were encountered. These consisted of edema of the cornea and petechial hemorrhages in the retina. These allergic manifestations subsided when the drug was withdrawn.

Immunologic studies have revealed that uveal pigment may act as an antigen in the homologous animal and is organ specific. These studies have given rise to the anaphylactic theory for the pathogenesis of sympathetic ophthalmia. Hypersensitivity to uveal pigment has been uniformly demonstrated in patients with sympathetic ophthalmitis.

Allergy and immunity have long been recognized as important factors in tuberculosis. The importance of the various factors involved have been determined in such relative degrees that Rich[1] in 1929 devised a formula which provides an interesting clinical picture by ascribing to each factor involved a varying importance.

$$\text{Lesion} = \frac{\text{Virulence} \times \text{Number} \times \text{Degeneration of Allergy}}{\text{Resistance}}$$

In phlyctenular keratoconjunctivitis the phlyctenules are an allergic reaction of the conjunctival and corneal epithelium to sensitization and intoxication with a foreign substance. Clinical evidence indicates that in a majority of these cases the foreign substance is tuberculoprotein, that is, the protein of the dead tubercle baccillus. Other manifestations of tubercular allergy are seen in many cases of chronic and recurrent choroiditis and chorioretinitis. In these cases the response to desensitization by small repeated doses of tuberculoprotein is almost magical.

It is important to emphasize the difference between actual tuberculosis, that is, an inflammation due to actual infection by living tubercle bacilli, and allergy due to tuberculoprotein.

It is an established fact that even normal persons carry tubercle bacilli in their bodies where the germs live, propagate, and die. The general immune reaction and general body resistance is sufficient in most people to prevent an active growth or inflammation, that is, active tuberculosis. However, some hypersensitive individuals have developed local allergy to the protein of these bacilli as they die off. This sensitization may be so extreme that only the most infinitesimal amount of such protein may cause a violent inflammatory reaction in such hypersensitive individuals. This type of allergy or hypersensitization accounts for great numbers of chronic and recurrent choroiditis, chorioretinitis, or anterior uveitis. So extreme is this sensitization that the beginning dose of desensitizing protein is one-millionth of a milligram of tuberculoprotein.

Among other interesting studies are those on lens protein relating to certain immunologic and serologic reactions. Through experiments in immunizing cattle to lens protein and to other tissue proteins of different species of animals, it has long been known that lens protein is organ specific and not species specific. Serums of immunized cattle react in the precipitin test with the antigens or lens protein from any species of animal but do not react with the blood serum or body protein of the animal species from which the immunizing lens protein is obtained. Stated in another way, lens protein is immunologically the same in all animals and differs from general body protein. Therefore, all animals have in their own crystalline lenses a tissue which, based on possible immunologic reactions, is a potential foreign protein. The term "potential foreign protein" is used advisedly, because as long as the lens remains normal and its capsule intact no immunologic or protein reaction occurs. And yet there remains in every animal, by the breakdown of the lens structure and by dialysis or by the rupture of the lens capsule, the possibility of becoming sensitized to the protein of its own lens. This is one of the more serious dangers in patients with incipient cataracts.

Furthermore, investigations have revealed that each component protein of the lens has not only its own chemical composition and isoelectric point but its own immunological reaction and specificity.

Investigations into the prenatal effect of lens antibodies have demonstrated that congenital cataracts can be produced in the laboratory. An antilens serum is prepared by injection of lens protein into an animal until the presence of precipitins to lens protein can be demonstrated in this animal's serum. This antilens serum is then injected into pregnant rabbits. Some of the mothers and the offspring of such injected rabbits appear with opaque autolyzed lenses. Controls of rabbits injected with serum of similar animals not immunized with lens protein do not show any lens changes.

In another experiment a group of guinea pigs whose antecedents had had normal eyes for four generations were injected intraperitoneally with lens protein and a month later some of these were given some of the same protein intravenously. All of these died of anaphylactic shock. As for the other animals, where needling operations were performed on their crystalline lenses, in every case the local reaction in the eyes was much more severe than in needled controls, indicating that sensitization had occurred. Three days after the needling operations these animals were bred. Two months later half of the offspring were born with typical congenital cataracts. Such induced eye defects can be transmitted to descendants for at least six generations without further injection of lens protein or sensitized serum.

A preponderance of evidence, therefore, exists to show that cataractous patients may have a definite hypersensitivity if the lens capsule is ruptured during the operation for cataract removal. In some cases it is even possible to demonstrate this hypersensitivity by cutaneous reaction to lens protein.

It is by such studies on allergic manifestations that the dangers of subjecting the eye of a patient to the protein of his own crystalline lens have been learned. Where intracapsular cataract operations are performed, this danger is obviated. This is one of the most important reasons why the Barraquer intracapsular technic for cataract surgery is far superior to most other methods.

2707—15 Book Bldg.

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Strabismus, With Special Reference to Fenestrating Tendomyectomy

A. ABEYTA, B.Sc., D.O., F.O.C.O.
Philadelphia

Strabismus or squint is an abnormal deviation of one or both eyes from the normal position. Human eyes, in their natural position, when directed straight ahead at a distant point, have their visual axes almost parallel. In this position the image falls on each corresponding macula. Since the visual axes are not quite parallel, but subtend an angle of a few seconds, the stimulation of identical or corresponding areas of the retinas, produces a stereoscopic image, which has depth as well as spatial position. By experience and education, the position of all objects in space is judged by the stimulation of corresponding areas on the retinas of both eyes.

The motility of each eye is governed by a group of six muscles, all of which, with the exception of the inferior oblique, arise from a fibrous ring around the optic foramen. The four recti are attached at corresponding points on the sclera a few millimeters posterior to the corneal margin. The attachment of the medial rectus, the nearest to the corneal margin, is about 5 mm. from it and the superior rectus, the farthest from the corneal margin, about 8 mm. from it. The superior oblique, after passing through its trochlea, passes backward, downward, and laterally, and is attached to the sclera at its posterior superior quadrant. The inferior oblique passes backward and laterally to be attached to the back and outer portion of the globe a little below the attachment of the superior oblique. The movements of the eyeball may be considered to take place around the center of movement which corresponds approximately to the center of the eyeball. The eyeball itself is not displaced by the action of any of its controlling muscles.

If we consider the center of the eyeball as the center of movement, the eyeball may be regarded as capable of motion in its three primary axes, which intersect at right angles to each other at the center of motion. These are, necessarily, the vertical, around which the cornea moves outward or inward; the transverse, which runs from right to left, around which the cornea moves up or down; and the sagittal, or anteroposterior, which corresponds to the line of vision, and around which torsion takes place, moving the 12 o'clock position on the cornea nasally or temporally.

In man, the eyes are so placed that the image received on the retina of each eye is almost identical, except for the fact that each eye receives its image from a slightly different angle. The blending of these two images by the visual brain centers into a single image having stereoscopic qualities of depth, is a visual function which is enjoyed only by man and the higher order of vertebrates. As we descend the vertebrate scale, we find the eyes are placed more and more laterally on the head until binocular single vision becomes greatly reduced or is almost nonexistent, as is the case in some fishes.

In man, this binocular function of the eyes is possible not only when the gaze is directed straight ahead, but also the same relationship of the visual function is maintained in any direction in which the visual axes are directed. The visual field of binocular fixation extends for about 45 degrees from the optic axis. When the gaze is directed straight ahead, binocular single vision is at its acme of perfection. In this position, called the primary position, the controlling muscles are at comparative rest, and exert the least effort to maintain ocular parallelism. This condition is often spoken of as orthophoria.

If, however, the gaze is directed either to the right or left on a horizontal plane, a group of four muscles comes into play. One set of two muscles, the synergists, contracts to pull the eye over, and the other set, the antagonists, relaxes to aid in the desired action. This is the simplest action of movement of the eyeball.

Now, if the gaze is directed upward or downward in a vertical plane from the primary position, the muscular action is not a simple one of purely elevation and depression of the eyeball. It will be remembered that these muscles, the superior and inferior recti, which predominate in this action, are attached on the eyeball at an angle of about 23 degrees to the line of fixation. To put it in another way, the long axis of the muscle makes an angle of 23 degrees with the line of fixation (Fig. 1). It is obvious, therefore, that

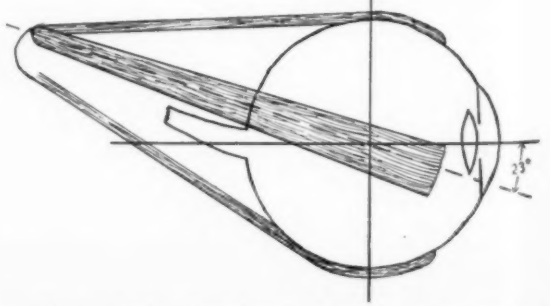

Fig. 1. Angle of attachment of superior rectus muscle at 23° degree angle to sagittal axis, producing intorsion on contraction.

the pull of these muscles exerts either an intorsion or extorsion of the vertical meridian of the cornea, as well as elevation or depression of the globe. However, the movement of the eyeball is maintained in the vertical plane, by bringing into play, the actions of the oblique muscles which neutralize the intorsion or extorsion produced by the elevators or depressors. The up and down movement in the vertical plane, therefore, is produced by the coordinated actions of the superior and inferior oblique muscles which overcome the torsion or extorsion exerted by the recti.

It should be noted at this point that in the simple up and down movement of the eyeball, the two superior and two inferior recti dominate this action, aided by the two superior and two inferior oblique muscles. This movement requires the coordinated action of eight muscles acting as synergists or antagonists in what appears to be just a simple up and down movement of the eyeball. Now, if the eye is directed at various angles within the binocular field, the two medial and the two lateral recti must also be brought into action. This makes a group of twelve muscles acting in perfect coordination and harmony to keep the visual axes in perfect alignment in order to maintain binocular single vision. When we consider also the nerve control required to keep these muscles in perfect coordination and the simultaneous visual interpretation of the nerve stimuli received by the retina, the complex action of this delicate neuromuscular apparatus may be appreciated.

When one or more of these controlling muscles fail in their normal function of proper coordination and alignment of the visual axes, the condition of ocular parallelism is disturbed and muscular imbalance supervenes. If this muscular imbalance can be overcome by additional muscular effort, the binocular fixation may be maintained and the fusion reflex preserved. These latent deviations or phorias, as they are called, are usually correctible with suitable glasses or prism combinations.

The existence of a phoria, or latent deviation, is not apparent to the casual observer. If the muscular mechanism is not adequate to preserve binocular fixation, one of the eyes will be diverted from its line of fixation, binocular single vision is interfered with and strabismus or squint supervenes.

In the early stages of squint, the individual may be troubled with double vision; however, he soon learns to suppress the image in the deviating eye and diplopia disappears. Before the appearance of the strabismus the two retinas received the visual image on corresponding foveal areas. This retinal impression is spoken of as normal retinal correspondence. After strabismus supervenes, the fixing point of the deviating eye is no longer its fovea, but a retinal point away from its normal position on the macular area. This new fixing point is forced to correspond with the fovea of the nondeviating eye; thus, a new system of correspondence and projection is set up and an anomalous retinal correspondence is established.

If this form of deviation is allowed to exist for a long period, the "new fovea" becomes firmly established as the corresponding point to the fixing eye and the correction of the squint by surgery or other means may never be able to re-establish normal binocular visual function.

Strabismus may be classified into two large groups, concomitant and paralytic, according to the etiological factors which produce it. It is beyond the purpose of this paper to discuss the etiology of strabismus in detail or even to describe the various types of squints ordinarily seen in the average clinical practice.

Concomitant strabismus occurs most commonly as the convergent type or esotropia. A large percentage of these convergent cases is of the accommodative type. The deviation results from an existing high degree of hyperopia where the patient has to exert a great deal of accommodative effort to accomplish fusion. Some of these cases have as their underlying etiologic factor a disturbance of the fusion sense due to pathology of the media or fundus. A defect in the motor control of the eye, originating in the nuclei of the third, fourth, or sixth cranial nerves or pathology in the midbrain in the pathways of these nerves, may also be a big factor in the disturbance of ocular motility.

The role of heredity in some cases of strabismus should also be kept in mind. For instance, hyperopia of a high degree or anomalies of the extraocular muscles often run in families. In the divergent type of concomitant squint, an unequal, high myopia may be the principal causative factor.

The paralytic type of strabismus is very often caused by a cranial injury, which may result in an increased intracranial pressure which in turn may affect the motor control of the eye. This is very often the case in paralysis of the superior oblique and the lateral rectus muscles. The frequency of paralysis of these two muscles may be explained by the fact that their nerves pursue a long course through the midbrain before they emerge from the cranial cavity and are, therefore, more exposed to insult than the oculomotor nerve. Toxic processes, produced by some inflammatory diseases such as syphilis and diphtheria and by degenerative diseases such as diabetes, arterial hypertension, or multiple sclerosis, very often damage the motor nerves before they emerge from the cranial vault. Pathology in the cavernous sinus and the sella turcica should not be overlooked, as the motor nerves are in close relationship with these structures before they leave the cranial cavity.

After entering the bony orbit, the motor nerves may be affected by an acute pathology in the nasal accessory sinuses. The close relationship of the superior oblique to the frontal sinus and of the medial rectus to the ethmoid sinus renders these two muscles especially vulnerable from these structures. Lesions of any nature anywhere in the orbital tissues may affect any of the extrinsic muscles. Also the possibility of direct injury to the lateral rectus by injury on the side of the face should not be forgotten.

The diagnosis of strabismus is a relatively simple matter in most cases. In marked cases the deviation is apparent on inspection. In the milder cases, however, the monocular cover test will differentiate between a phoria and a true squint. In a phoria, when one eye is alternately covered and uncovered, the covered eye moves; but when the cover is removed the eye swings back to fixation again. If the uncovered eye moves, strabismus is present. This test is, of course, applied to both eyes. If neither eye moves on covering the opposite eye, no strabismus is present.

The measurement of a squint is a simple procedure. The perimeter gives a very accurate measurement of the deviation in degrees. The corneal reflex test is also reliable. Both of these tests are nearly always applicable, since the measurement may be estimated even when amblyopia is present. The deviation

in degrees should be carefully recorded before any treatment is instituted and at regular intervals thereafter.

When a deviation of the eyes is noted in infants, the prognosis must be guarded. It should be remembered that binocular fixation is not established until about the fifth or sixth month and in some cases it may not be fully developed until the tenth or twelfth month. Young children who are slow in developing conjugate movements of the eyes often cause their parents a great deal of anxiety. Many of them will develop normal binocular function before the twelfth month. If, however, the ocular deviation is very pronounced after the second month, a thorough study of the case by an ophthalmologist is imperative.

An adequate examination should be made and simple measures instituted at once in an attempt to correct the defect before anomalous retinal correspondence is established or amblyopia supervenes. It should be explained to parents of infants with squint that very often months, and even years, are needed to bring about satisfactory correction and re-establishment of normal ocular function. It is of paramount importance to preserve normal retinal correspondence and to avoid the development of amblyopia ex anopia in all cases of strabismus by the simple measures known to all ophthalmologists. Atropinization and the methodical occlusion of the fixing eye; wearing of suitable corrective lenses, if required; or orthoptic training very often are the fundamental factors in the satisfactory correction of strabismus, especially if surgical correction is contemplated at a later date. Surgical correction of strabismus is seldom satisfactory when amblyopia is present.

An attempt to ascertain the muscle or muscles involved should be made as early as possible. This can be done even in very young children when their attention can be directed in the six cardinal points of gaze. It should be emphasized that the correction of strabismus should be started as early as possible so that children will not become the subject of ridicule when they reach school age. It is well known that children afflicted by a squint invariably develop an inferiority complex, which may affect their entire lives.

The parents of these children almost always are desirous and anxious to have the condition corrected in the best possible manner. Even if the correction of the squint is not perfect, as happens in some cases, the parents, as well as the physician, should feel that they have done everything possible to avoid disfigurement which may persist throughout life.

Today, in this country, there is no excuse whatsoever for letting a cross-eyed child go without proper

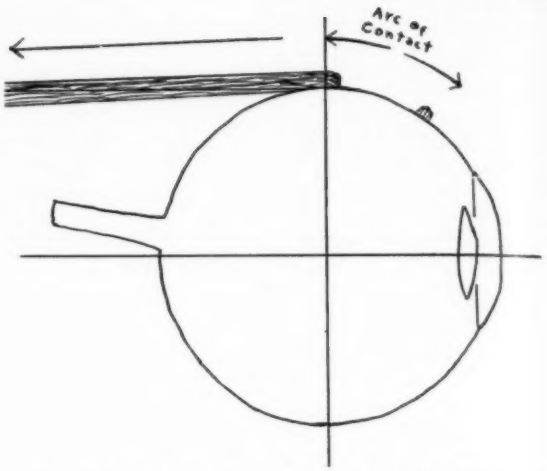

Fig. 2. Diminished contact on sclera of internal rectus muscle in classical resection and recession, with loss of convergence power.

care. There are splendid eye clinics in all parts of the country where such care may be obtained regardless of the financial status of the patient. The parents of the cross-eyed child should first consult their family physician who, in turn, will recommend a hospital or clinic where the child can receive care.

Up to this point I have tried to analyze briefly the most common forms of strabismus. Fenestrating tendomyectomy is just one of the many procedures, which may be employed in the surgical correction of certain types of ocular deviations.

The simple measures which mean so much in the early stages of squint have already been mentioned. If these simple measures fail to achieve the desired result, one must then resort to surgery. The type of operation and the muscles to be operated on must, of course, be decided beforehand by the surgeon.

In some cases, fenestration of the overactive muscle is all that is necessary. This may be combined with an advancement of the opposing muscle. If this combined operation is not sufficient, fenestration of the complementary muscle on the opposite eye may be employed. I employ fenestration of the overactive muscle in place of recession. In the classical recession, the new attachment may or may not remain as is intended. It is difficult to reattach an ocular muscle, so that its pull is in the same line of direction as it was originally. If the new attachment is out of alignment, there may result an element of torsion of the eyeball when this muscle contracts. In the classical recession, the power of convergence is greatly im-

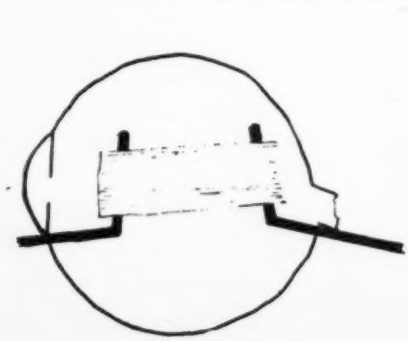

Fig. 3

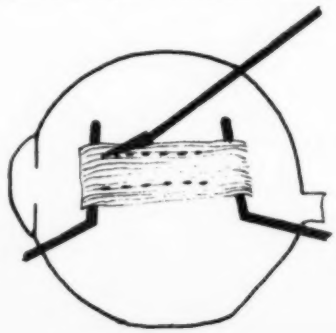

Fig. 4

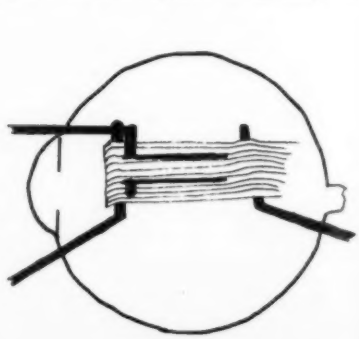

Fig. 5

Fig. 6

Fig. 7

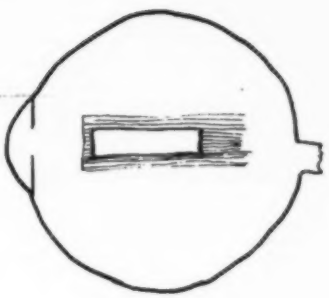

Fig. 8

peded due to the fact that the arc of contact on the sclera has been very much reduced (Fig. 2).

Fenestrating tendomyectomy is the dissection and removal of a portion of the middle third of the tendon and muscle the action of which it is desired to weaken. The muscle is exposed in the usual manner, dissected backward the desired distance, and then lifted on two hooks (Fig. 3). With a dull pointed knife the muscle fibers, including the tendon, are separated longitudinally by two parallel incisions dividing the muscle into thirds (Fig. 4). The length of the incisions is judged by the amount of weakening to be produced. The middle third is lifted with a hook (Fig. 5) close to the tendinous attachment, and severed with scissors (Fig. 6). The loose strip of muscle is now picked up with forceps, stripped backward as much as desired, and cut transversely with scissors (Fig. 7). This leaves a rectangular window formed by the upper and lower thirds which still remain attached at their original position on the sclera (Fig. 8).

The amount of muscle resected may vary with each individual case and the judgment of the surgeon. It may be less or more than one third of the width of the muscle. When the greatest amount of weakening is desired, only a few muscle fibers may be left at the upper and lower edges of the muscle. In any case, the power of convergence is not entirely destroyed, because a part of the tendon remains undisturbed, and the arc of contact on the sclera is as long as before, weakening, but not destroying, the power of convergence (Fig. 9). The length of the strip of muscle removed may be from 2 or 3 mm. to 6 mm. or more, depending on the results required. A slight weakening action may be obtained by merely severing the middle third of the tendon without resection, and allowing it to recede of its own accord. This forms a tiny window at the point of severance, which may be all that is necessary to bring about the desired result.

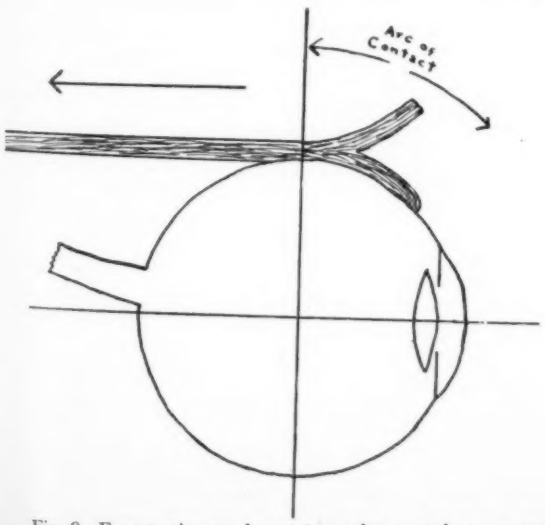

Fig. 9. Fenestrating tendomyectomy does not decrease arc of contact on sclera.

A cross section of the ocular muscles is crescentic in shape. The middle third is, of course, the thickest and strongest part of the muscle. The outer thirds taper towards their respective edges. This crescentic shape of the muscles should be kept in mind when deciding on the amount of muscle to be resected.

The tendon of the internal rectus, for example, is about 10 mm. in width. This is the strongest of the ocular muscles. The strength of any muscle depends largely on the area of its cross section. One square millimeter of muscle on cross section is said to exert a pull of about 62 grams when it contracts. A cross section of the internal rectus at its thickest part has an area of about 18 sq. mm. It, therefore, has a potential pull of about 1000 grams or a little over 2 pounds.

Fenestration of the overactive muscle is, in my opinion, preferable by far to other lengthening operations or resection and recession as usually employed. We know, from experience, that exact measurements of a living tissue are almost impossible to make. These measurements, at best, are an estimate. It is almost impossible to foretell the amount of pull a muscle will exert after it is resected a given number of millimeters or what its exact function will be after it is reattached at any given point. There are no reasonable grounds to presume that cutting a muscle a given number of millimeters or changing its attachment on the sclera to any given point is going to correct a strabismus of a certain number of degrees. There are many factors in surgery which preclude exact prediction of what the final functional result will be. Such factors as the binocular pathology present, the manner of healing of the traumatized tissues, and the psychic control of the ocular movements have a profound effect on the final result. All these factors combined make surgery of the ocular muscles more a matter of good judgment than precise measurements. For this reason it is preferable to correct strabismus by graded steps, instead of attempting to achieve full correction in one operation.

The preservation of normal retinal correspondence and the avoidance of amblyopia are, perhaps, the

two most important factors which will determine the success or failure in the correction of squint. When anomalous retinal correspondence and amblyopia are already present to a moderate degree, it is quite possible to get a very satisfactory correction by surgery, corrective glasses, and/or orthoptic training, if these corrective measures are carried through for 2 or more years, depending largely on the type of case and the regularity of the treatments.

Fenestrating tendomyectomy may be applied to any of the ocular muscles where a weakening of the antagonist is desired. In paralytic strabismus, fenestration of the opposing muscle may be all that is necessary to bring about a satisfactory correction. A resection and advancement of the paralyzed muscle may be employed to supplement the fenestration operation. In conclusion, I can state that, in the cases where I have employed fenestrating tendomyectomy in the last year and a half, the results have been most gratifying.

4615 Locust St.

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Beta Radium Irradiation of the Nasopharynx for Hyperplastic Lymphoid Tissue

ALFONS I. WRAY, D.O.
Los Angeles

Hyperplastic lymphoid tissue in the nasopharynx plays an important role as an etiologic factor in otitic disease such as acute and chronic suppurative otitis media and its complications of mastoiditis and deafness but it can be successfully controlled by beta radium irradiation.

Conductive deafness, particularly in children, has been found to be caused by hyperplasia of lymphoid tissue about the orifices of the eustachian tubes and in the tubes themselves, thus preventing the normal interchange of air between the middle ear and the outside world.

In pathology of the ears, where the eustachian tubes are involved, a partial vacuum first takes place in the middle ear; this is followed by a catarrhal exudate and not infrequently by acute or chronic suppuration. If the ear discharges for a short time only, then granulation tissue, connective tissue, and, finally, scar tissue will be deposited in the middle ear about the ossicles and the walls of the chamber. If the acute attack has been of short duration then the injury to the middle ear and hearing loss are minimal. When, however, the attack of otitis media has been a severe one, or one of long duration, the ear has received more permanent injury and the hearing loss is respectively greater. On the other hand, when suppurative otitis media has occurred, and if the etiologic factor has not been removed, recurrent attacks of acute otitis media will follow or chronic suppurative otitis media will result.

To treat the cause of otitis media is much wiser than to treat the results. The otorhinolaryngologist can contribute a great deal in the prophylaxis of otitis media, mastoiditis, and deafness.

In the past remedial measures included tonsillectomy and adenoidectomy. The ear, nose, and throat specialist did a skillful operation in removing such tissues and, in many instances, prevented the otitic pathology. However, while a certain percentage of cases yielded successfully to such surgery, a certain percentage had recurrences of suppurative otitis media, mastoiditis, acute or chronic otorrhea, or a residual degree of deafness from these pathologies.

In the Armed Forces during World War II aerotitis caused much disability, particularly in the air and submarine services. When the condition was found to be due to hyperplastic lymphoid tissue surrounding the orifices of the auditory tubes, use of the nasopharyngeal radium applicator in aviators and submarine men became routine, reducing aerotitis 90 per cent. The results were nothing short of marvelous in increasing efficiency in the Air Corps and it was here that irradiation became established as a prophylactic measure. The method was not only used prophylactically, but also therapeutically in those men having aerotitis and otitis media. Their disabilities were soon alleviated.

In surgery of the pharynx, the tonsils and adenoids can be successfully removed but a great deal of lymphoid tissue, which is an integral part of the mucous membrane, is inoperable. In young children who are operated upon too early in life (before the seventh year) there often occurs a starvation of lymphoid tissue and compensatory stimulation results in lymphoid hyperplasia throughout the pharynx, particularly about the orifices of the auditory tubes. This occurrence predisposes to granular pharyngitis, bronchial asthma, postnasal drip, bronchitis, aerotitis, otitis media, mastoiditis, and conductive deafness.

In these cases where lymphoid tissue has been overproliferated, beta radium irradiation will produce curative results that can be achieved only by means of this therapy. The work of S. J. Crowe[1-4] has been outstanding.

Obviously, where large masses of lymphoid tissue occur in the nasopharynx (such as adenoids) they should be removed surgically. Crowe found that during the war when beds were not available in hospitals for tonsillectomies and adenoidectomies, employment of radium emanations alone alleviated the symptoms of many of his patients.

Crowe also states that in a survey of 1,365 cases operated upon for tonsil and adenoid removal he found a recurrence of adenoids in more than 75 per cent of the patients who were operated on before puberty. Many of these patients had been operated upon by him and by other competent surgeons. It is quite evident that recurrence of adenoids is the rule rather than the exception. This is particularly so if the patient was very young when the surgery was done.

Surgery for tonsils and adenoids, then, in young children is not advantageous to the child's health unless something is done to prevent the regrowth of the adenoids and the lymphoid tissue throughout the nasopharynx.

In Crowe's clinic beta radium irradiation has been done routinely for years on all cases where tonsillectomies and adenoidectomies were performed. I routinely employ radium irradiation in all cases in which I have removed tonsils and adenoids in order to prevent hyperplasia of lymphoid tissue in the nasopharynx postoperatively.

When patients suffering from granular pharyngitis, otitis media, aerotitis, tinnitus aurium, vertigo, bronchial asthma, postnasal discharge, allergic rhinitis, pharyngitis, and paranasal sinusitis are referred to me, I routinely examine the nose and the nasopharynx carefully, survey the nasopharynx with the nasal pharyngoscope, and inspect the orifices of the eustachian tubes. Wherever it is found that excessive lymphoid tissue exists, beta radium emanation is employed.

The monel metal radium applicator designed for the medical corps of the United States Army is the most practical instrument for the purpose of applying beta radium irradiations to the nasopharynx.

Beta radium irradiation is not employed for the purpose of total eradication of lymphoid tissue in the pharynx but as a means of controlling hyperplasia. To destroy all of the lymphoid tissue would produce pharyngitis sicca, a condition almost as undesirable as the hyperplastic lymphoid condition.

The application of the beta irradiation, as I employ it, produces the desired therapeutic results, namely, control of the hyperplasia of the lymphoid tissue in the pharynx, including the lymphoid tissue on the nasal wall and the turbinates where they face the epipharynx.

While Crowe states that the use of beta irradiation affects only that portion of the adenoid tissue that reproduces, controlling mitosis as it were, and does not destroy any portion of the hyperplastic tissue itself, that view seems rather too conservative. The clinician who has viewed the nasopharynx with the pharyngoscope and observed the hyperplastic lymph tissue present, when resurveying this same area 4 months after the application of radium has no doubt that quantities of this tissue have vanished.

No other means available to the clinician for control of the hyperplasia of lymphoid tissue and removal of hyperplastic tissue about the nasopharynx does this as efficiently and safely and leaves the pharynx in as good physiologic condition as the judicious use of beta irradiation.

Beta radium emanations penetrate only a short distance into the tissues. They are 75 per cent absorbed at 3 mm. depth.[1] Absorption of these rays produces the therapeutic effect. The remainder of the unabsorbed rays have less effect upon the tissues because of the distance from the applicator, the source of the irradiation. The law that applies to the intensity of the radium irradiation is identical to that which governs the intensity of illumination of the visible rays of the spectrum, namely: *The intensity of the radium emanations varies inversely with the square of the distance from the source of radiation.* Example: At a distance of 5 cm. compared to 1 cm. from the source of emanation, to find the intensity of emanation, square the distance 5, which is 25; according to this law, the intensity of the emanations at 5 cm. will be 1/25 of that at 1 cm.

The gamma portion of irradiation of a 50 mg. monel metal nasopharyngeal applicator of 12 minutes' duration as applied bilaterally to the nasopharynx is negligible and will not produce any appreciable effect on any tissue.

The success of the application of the beta irradiation on the lymphoid tissue is predicated on the knowledge that lymphoid tissue is by far the most sensitive tissue to irradiation with x-ray and radium. Furthermore, the portion of the lymphoid tissue which reproduces is still more sensitive to this irradiation than other lymphoid tissue.

Beta irradiation, while it affects the lymphoid tissue in the pharynx, as stated previously, does not impair the mucous glands in the mucous membrane in the pharynx nor is the epithelium in any way impaired.

METHOD OF TREATMENT

The applicator used is the monel metal radium nasopharyngeal applicator designed by Crowe and Burnam. It was used in over 25,000 treatments in the Army Air Force. The rays used are the hard beta rays. The active part of the applicator is a monel metal tubular chamber 15 mm. in length with an inside diameter of 1.7 mm., a wall thickness of 0.3 mm., and an outside diameter of 2.3 mm. The monel metal part is mounted on a brass handle. The chamber of this applicator contains 50 mg. of radium sulfate.

The treatments consist of a course of three bilateral irradiations of 12 minutes each at 10-day intervals.

Under no circumstances are more treatments given for at least 6 months or a year. Seldom are additional treatments required.

Crowe says his experience of over 20 years' use of radium for the treatment of hyperplastic lymphoid tissue indicates that it is a safe modality to employ if properly used.

SUMMARY

Hyperplastic lymphoid tissue in the nasopharynx plays an important role in making that area a hot spot for focal infection. Hyperplastic lymphoid tissue has a greater tendency to infection than the usual adenoid tissue found in the nasopharynx.

Recurrent purulent otitis media is caused by a hyperplasia of lymphoid tissue about the orifices of the auditory tubes and within the tubes.

It is much wiser to treat the cause of otitis media than to treat its effects. A considerable portion of lymphoid tissue in the nasopharynx is inoperable but yields admirably to beta radium irradiations.

Young children (under 7 years of age) who are indiscriminately submitted to tonsillectomy and adenoidectomy are not benefited by such operations. Some of these cases will develop chronic nasopharyngitis, recurrent purulent otitis media, bronchial asthma, bronchitis, and granular pharyngitis. Obviously they will be predisposed to upper respiratory infections. To prevent such infections and alleviate those that have already been acquired, beta radium irradiation is definitely indicated.

To prevent recurrence of adenoids after tonsillectomy and adenoidectomy, routine postoperative beta radium irradiation should always be done.

In the treatment of obstructive deafness beta irradiation gives good results in the majority of cases.

If large masses of lymphoid tissue are present, they should be surgically removed but beta radium emanations should follow.

Beta irradiation of the nasopharynx easily and safely removes or reduces hyperplastic lymphoid tissue without leaving a trace of scar tissue, does not impair the function of the pharynx, and is useful both prophylactically and curatively.

4476 Crenshaw Blvd.

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Astigmatism

RALPH M. CONNELL, D.O.
Dallas, Tex.

Astigmatism is that condition of refraction wherein a point focus of light cannot be formed upon the retina. In practice, no eye is found to be completely free from astigmatism, the form of ametropia under which are included those anomalies in the optical mechanism wherein an appreciable error is caused by the unequal refraction of light in different meridians. Sir Isaac Newton, who himself appears to have been astigmatic, first considered the question of astigmatism in 1727.

ETIOLOGY

Astigmatism may be caused by an error of curvature, of centering, or of refractive index.

Curvature astigmatism, if of any high degree, has its seat most frequently in the cornea. The anomaly is usually congenital. The most common error is one where the vertical curve is greater than the horizontal (about 0.25 diopter); this is accepted as physiological and is presumably due to the pressure of the upper lid upon the eye. This tends to increase to a very slight extent with advancing years.

Acquired astigmatism is not infrequently seen. Disease of the cornea results in its deformity. Traumatic interference with the cornea brings about the same result. Corneal astigmatism can be induced by the pressure of tumors of the lids.

Curvature astigmatism of the lens also occurs frequently. Often the lens is placed slightly obliquely or out of line in the optical system and this, causing a certain amount of decentering, produces a corresponding astigmatism. Traumatic subluxation of the lens has similar results. A small amount of index astigmatism occurs physiologically in the lens. This is usually slight.

As a result of the above conditions there are, instead of a single focal point, two focal lines separated from each other by a focal interval. The length of this focal interval is a measure of the degree of astigmatism and the correction of the error can only be accomplished by reducing these two foci into one. A cylindrical lens refracts rays of light in one plane and leaves unaltered the rays in the plane perpendicular to this.

TYPES OF ASTIGMATISM

Regular astigmatism is that in which the two principal meridians are at right angles and which is, therefore, susceptible of correction. When the axes are not at right angles but are crossed obliquely, the optical system is still resolvable into a spherocylindrical combination and the condition is called oblique astigmatism.

Where there are irregularities in the curvature of the meridians so that no geometrical figure is adhered to the condition is called irregular astigmatism; it does not lend itself to adequate correction by spectacles.

Regular Astigmatism.—The type may be divided into the following classes:

1. Simple hypermetropic astigmatism is that in which rays in one principal meridian are focused on the retina while those in the other meridian are focused figuratively behind the retina. (Example: + 1.00 cylinder axis 90.)

2. Simple myopic astigmatism is that in which rays in one meridian are focused on the retina, while those in the other are focused figuratively in front of it. (Example: — 1.00 cylinder axis 180.)

3. Compound hyperopic astigmatism is that in which both meridians are hyperopic but of different degree. (Example: + 1.00 sphere with + 1.75 cylinder axis 90.)

4. Compound myopic astigmatism is that in which both meridians are myopic but of different degree. (Example: — 1.00 sphere with — 1.50 cylinder axis 180.)

5. Mixed astigmatism is that in which one meridian is myopic and the other hyperopic. (Example: — 2.00 sphere with + 3.50 cylinder axis 180.)

Symptoms: When the degree of astigmatism is appreciable, since in no circumstances can the eye form a sharply defined image upon the retina, the diminution of visual acuity may be very considerable. In his endeavor to see clearly the patient attempts to focus, not the central circle of least diffusion, but one or other of the focal lines. Other things being equal the meridian which approaches most nearly the emmetropic condition is chosen, and if the two are approximately equally in error, the vertical focal line is as a rule preferentially sought after. Since a focal line is made the object of attention, the vision of the astigmatic patient shows peculiarities other than indistinctness because of the elongated form of the diffusion circles which he has to interpret. Circles become elongated into ovals; a point of light appears tailed off; and a line, which consists of a series of points, appears as a succession of strokes fused into a blurred image. Thus in every case of regular astigmatism there is one direction in which lines appear most distinct and one in which they appear most confused. If the axis of the cylinder is oblique, the head is frequently held to one side so as to reduce the distortion, a habit which may in children lead to the development of scoliosis. In all cases there is a tendency to half close the lids so that by cutting out the rays in one meridian, the object may appear more distinct.

The continuous strain resulting from the attempt to see clearly is a prolific cause of asthenopia and eye strain. In fact, it is the patients with less than 1 diopter of error who most often complain of headaches that vary from a mild frontal ache to violent explosions of pain, dizziness, neurasthenia, irritability, fatigue, and a number of reflex nervous disturbances. The most severe symptoms are usually seen in cases of hypermetropic astigmatism, where the accommodation makes further efforts to overcome the hypermetropia. In astigmatism of higher grade poor vision for distance and near is the leading symptom.

Diagnosis and Correction of Regular Astigmatism: There are four most commonly used methods of determining the error of astigmatism.

1. There are two useful charts, one for locating the axis and the other for determining the amount of astigmatism. The first chart consists of a series of numbered radiating lines at 15 degree intervals superimposed on a series of concentric circles. The second chart consists of a disk attached at its center to a white cardboard square. The lines of the cross are wider than the lines of the squares.

2. For use with the Project-o-Chart there is a Robinson-Cohen slide which consists of two broken black lines on a monochromatic red background arranged at right angles to form a cross. They can be rotated to any desired axis by means of a knob located at the top of the slide. The axis is indicated on the axis scale by a pointer attached to the dial.

The astigmatic dial is used most efficiently when the patient is wearing a spherical lens which fogs him about 0.50 diopter in the weakest meridian. This can be determined by retinoscopy or by a preliminary subjective check. A red background has been selected for the test because the fogged eye is less myopic for red than for other colors and therefore blurring of lines will be more evident than with a poorer focus.

The patient is directed to state whether he sees the two lines of the cross and whether one line appears blacker and more distinct than the other. The dial is then turned until there is a maximum difference between the two lines, one appearing black and perhaps unbroken while the other appears broken and blurred or practically invisible. If this judgment is not easily made, the dial is rotated until the two lines appear equally blurred and then reversed until they again appear equally blurred. The axis of maximum difference will then be midway between these two points, which are 90 degrees apart when the judgment is precise.

After the astigmatic dial is set so that there is a maximum difference between the two lines a minus lens of the power indicated by retinoscopy is inserted with its axis at right angles to that of the blackest line. Since the axis indicator moves parallel to the line of the cross which has two dots at one end, the cylinder should be inserted at the axis indicated on the dial when the line without the dots is the blacker, but at 90 degrees from this axis when the line with the dots is the more distinct. The power of the trial cylinder is then changed until that one is found which just equalizes the two lines, or for which a 0.12 diopter change reverses the relative distinctness of the two lines. A cross-cylinder check of the axis and power of the correcting cylinder can be made at this time if desired, but no change is usually indicated if precise discriminations have been made during the test.

3. This is the method I prefer. I first do my refraction with the streak retinoscope. After examining the eyes objectively and subjectively I arrive at a combination of lenses which apparently gives approximately the desired vision. If there is astigmatism, the Jackson crossed cylinder is employed as a final check.

Let us assume that the correction arrived at by the method employed showed a result of + 2.00 + 1.00 axis 90. If the vision of the patient with this combination is 20/20, we can feel sure that the correction cannot be far from right. The crossed cylinder composed of the + .25 and — .25 diopter cylinders is then turned with the plus axis over the axis of the correcting cylinder in the phoropter. If the patient indicates that vision is disturbed and worse than without the crossed cylinder, it is turned 90 degrees so that the minus axis is directly over the axis of the correcting cylinder. If the patient again indicates that vision is disturbed, the examiner can feel positive that the original result is accurate.

The application of the crossed cylinder over the lens first increases the cylindric value and second, decreases the spherical value of the lens. When, however, an attempt is made to change the strength of the cylinder by holding before it the proper convex and concave cylinders from the trial set, at the same time there is alteration of the general convex and concave effect of the lens, and so, without the corresponding change in the spherical, there is not produced simply a change of the cylindrical effect, but a double alteration that may be very misleading.

Commonly it is best to ascertain first that the strength of the spherical cannot be improved by any change and then use the crossed cylinder to fix the strength of the cylinder. However, where the cylindrical portion of the lens is very strong, it may be better to reverse the order.

4. The accuracy of the axis of the cylinder is determined by applying the cross cylinder marked + .25 and — .25 diopters before the cylinder in the phoropter so that the handle is in line with the axis of the cylinder in the phoropter. In this case plus cylinders will be used and the cross cylinder twirled quickly. It will then lie 45 degrees to the other side of the axis of the cylinder in the phoropter. The patient is directed to state which position (first or second) gives less blur. The correcting cylinder should be rotated slightly in the direction toward the plus which gives clearer vision. The crossing through process should be repeated as many times as is necessary until neither position produces less blur, i.e., both are equally blurred.

The amount of change in the axis of the combination, produced at each reversal of the crossed cylinder, varies with the proportion of the strength of the astigmatic lens. The stronger the cylinder required the less change of the axis does an astigmic of a certain strength produce. A strong cylinder needs to have its direction changed but slightly—about 5 degrees—to cause a noticeable change in distinctness of vision. A weak cylinder must have the direction of its axis more widely shifted to give the same noticeable effect on vision—often 15 degrees. A record should be made of the correction accepted by the patient and the vision obtained in each eye, separately.

The experienced practitioner has found cases in which the apparent full correction of the astigmatic error was not tolerated. Also he has noted cases in

which a new cylindrical correction, while stronger than the former correction, did not improve the patient's visual acuity to the extent that the great difference between the two corrections would seem to predict. In such a condition the patient may have worn the old correction for several years with perfect comfort and satisfaction. No doubt this patient was formerly undercorrected through error. Where a stronger cylindrical correction is indicated, it does not always give the satisfaction and comfort that was given with the old and weaker correction.

Similar experiences occur when prescribing cylindrical corrections for patients who have never worn glasses before. It is often difficult to decide what percentage of the full correction should be first prescribed. The judgment in the reduction of any correction is based upon the patient's mentality and the practitioner's past experience with similar conditions. Some physicians always give full correction and explain to the patient that he or she may experience difficulty the first few weeks.

An important diagnostic point to be remembered is that whenever two dissimilar corrections give similar visual acuity results there appears to be a single corresponding meridian in both of these corrections that is identical in power. This meridian is always located directly between the two principal meridians of the lens. In other words, it is that meridian which bisects the 90 degree angle between the major and minor axis of the lens. For example, if the two corrections have their principal meridians at 90 and 180 the corresponding meridians in both lenses, having equal power, will be the 45th and 135th. The power of the lenses on these bisecting meridians is equal to the middle power between the powers of the two principal meridians.

The middle power of any compound lens is named "the spherical equivalent of the compound."

The "spherical equivalent" of a simple cylinder is equal to half the power of the cylinder.

The "spherical equivalent of a compound is determined by adding half of the power of the cylinder to the spherical element of the compound."

In a case where the cylinder correction is of high degree and the patient has not worn glasses before, a reduction of the cylinder for the initial correction may be in order. The rule to follow in this case is: Add half of the amount of the reduced part of the cylinder to the spherical element, always maintaining the same sign of the cylinder in the addition.

Particular attention and effort should be displayed in balancing the correction of the two eyes in such a manner that the acuity of the dominant eye will be slightly superior to that of the nondominant one.

Change in Axis: Every refractionist has noticed a change in the amount of astigmia shown in the same patient in examinations extending over a period of years. Usually the change is an increase but occasionally there is a diminution of the amount of the astigmia and at times even a disappearance of this optical fault. A change in the astigmatic axis is of less frequent occurrence but happens often enough to assure one that it is not the result of careless refracting on the part of the refractionist.

What causes such changes in the astigmatic axis is not easy to say. It must be due either to a change in the curvature of the cornea or lens or a shifting in the position of the lens in relation to the optical axis. Some authorities believe that lenticular astigmia is most probably caused by a tilting of the lens resulting from a contraction of certain fibers of Bowman's muscle, in response to a demand from the visual centers for a correction of the distorted image caused by the corneal astigmia.

If the lenticular astigmia becomes less as the patient grows older, it is possible that in a case where the axis of the corneal fault was originally at right angles to that of the lenticular astigmia, the relaxation of the fibers of Bowman may produce a lenticular astigmia more or less oblique to the corneal axis. The lens necessary to correct the resulting astigmia would show a corresponding change of axis. This shifting of the astigmatic axis continues until the crystalline lens has assumed a fixed position, probably when presbyopia is well advanced.

There is one other point I want to mention about reading glasses. When the eyes are converged and depressed, the superior oblique muscles must play a very important part in the depression, and with this there may be a variable amount of intorsion depending upon the actual insertion of these muscles. If intorsion occurs the axes of the cylinders should be intorted also. Occasionally a slight intorsion of high cylinders results in better and more comfortable vision of near objects.

Irregular Astigmatism.—In irregular astigmatism the refraction in different meridians is quite irregular. It is only when the difference in the refractivity is accentuated, as in incipient cataract, that symptoms are caused: indeed, in this condition the distortion may be so great as to lead to polyopia.

A marked degree of irregular astigmatism is commonly found only in pathological conditions of the cornea, when it is the result of irregular healing after trauma, inflammation, or ulcerating processes. Here the visual defect caused by the optical error is accentuated by the presence of opacities and the combination of the two makes any attempt to improve vision by glasses frequently difficult or impossible.

A rarer condition is conical cornea (keratoconus). Due to a developmental defect, the cornea is pushed forward, by intraocular pressure, in the shape of a cone with the apex slightly below the center. The eye becomes myopic, but because of the hyperbolic nature of the curvature, the refraction is irregular. The condition is progressive and the optical conditions tend to change.

A condition of somewhat the same nature is seen in lenticonus which is due to a similar deformation of the curvature of the anterior or posterior surface of the lens or of the configuration of its nucleus. It is a rare congenital anomaly, the origin of which is in doubt. The center of the pupillary aperture has a myopic refraction while the periphery is relatively hypermetropic. The difference may be so great as to make two images of the fundus possible.

Treatment: The treatment of all varieties of irregular astigmatism is difficult and, at best, unsatisfactory. In cases in which no opacities are present, typically in cases of conical cornea, an immense improvement may be attained by the use of contact lens. In other cases operative measures may be indicated. For example, when there is an opaque central cornea and a clear periphery an optical iridectomy may improve vision; cauterization of the tip of the cone may stay the progress of a conical cornea; or discission of the lens may make a patient with lenticonus much more comfortable by rendering him aphakic.

CONCLUSIONS

1. Accurate diagnosis of the amount and axis of astigmatism is essential.

2. The results obtained from the prescription given the patient will depend a great deal on the ability of the refractionist to judge from past experience with similar corrections what prescription to give the patient.

3. The mental ability of the patient is important in determining acceptance of correction. For instance: A civil engineer, accustomed to mechanical drawings, will grasp changes made in cross cylinder check quicker than an uneducated laborer. Younger people are more adaptable than older ones. Bifocals are more likely to be troublesome if they have never been worn previously than if a prescription is being changed.

4502 Lovers Lane
University Park

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Nonsurgical Treatment of Chronic Discharging Ear

EDWARD W. DAVIDSON, A.B., D.O., F.O.C.O., F.A.C.O.S.
Los Angeles

Successful management of the chronic discharging ear requires careful analysis in order properly to adapt the treatment to the best interest of the individual case. Not all chronic discharging ears require surgical therapy; conversely, not all respond to medical care. A middle of the road attitude with careful selection of the cases after evaluation of the conditions met with in each individual ear offers the best hope of successful therapy.

The first step in classification of an ear disorder is to decide whether it is otitis externa or otitis media and/or mastoiditis. This usually offers very little difficulty. However, chronic otitis externa may produce a discharging ear over a period of 30 or 40 years, without necessarily having any middle ear involvement. The mistake of operating on these cases without having demonstrated the existence of otitis media has been made.

If the infection is shown to be deeper than the ear drum, then those factors which will classify it either as a surgical case or as a medical case are considered. If there is reasonable hope that medical treatment may effect a cure, this should be tried before surgery is attempted. A considerable number of chronic infections of the middle ear will clear up under medical treatment.

The condition of the drum will be considered first. A large perforation in the drum favors the penetration of any medicine into the middle ear and the deeper structures. It also favors thorough cleansing of the middle ear. Excess granulations visible through the ear canal may be a favorable sign for conservative treatment—for all visible granulations may be eliminated as office procedure and this greatly benefits the case.

A liquid purulent discharge from a small perforation of the drum is not a good omen but does not preclude the possibility of success with conservative measures. The presence of dry, cheese-like solidified exudate showing in the middle ear through a large opening in the drum in my experience has indicated a favorable situation for the clearing of those conditions by medical treatment.

X-rays should be taken in all cases at the beginning of treatment. If the x-rays show a large cavitation in the mastoid area, conservative treatment is not very likely to be successful. If, on the other hand, the x-ray shows sclerosis of the mastoid area with very few cells, most of the trouble being in the middle ear, then success is more likely.

The functional efficiency of the ear must be considered. If the ear is practically deaf, so that the degree of hearing present is of no value to the patient, then there is not so much to lose by surgery as there might be in the case of an ear which is functioning satisfactorily and which is necessary to the well-being of the patient because of the poor function of the other ear.

Of course, the threat of serious complications is a contraindication to the experimental effort to cure with conservative means. These complications may call for immediate surgery.

In properly selected cases I believe that success may be attained with medical care in up to 75 per cent of cases with chronic discharge from the middle ear. Many cases which do not offer such a good prognosis at first have yielded to conservative treatment while an opportunity to perform surgery is awaited. If a chronic discharging ear can be cured by conservative measures, the prognosis for continued health and comfort is better than that offered by surgery.

Before considering the therapeutic measures available for the attempt to cure the chronic discharging ear, some of the general health measures, which should receive attention, will be mentioned briefly. Chronic sinusitis, nasal polyps, abnormal turbinates, and deformities of the septum, by interfering with the health of the tissues around the eustachian tube, not only lessen the likelihood of success of conservative treatment but also they may compromise the success of surgical treatment. Therefore, these conditions should be corrected at the outset.

Infected tonsils and infected lymphoid tissue around the opening of the eustachian tubes are definite indications for appropriate therapeutic measures as a part of the program of rehabilitating the discharging ear. The eustachian tubes should be examined with the nasopharyngoscope and if there are any lymphoid follicles visible around the orifice they should be treated with applications of radium. The 50 mg. monel metal enclosed radium applicator which was developed during World War II has proved to be a very beneficial agent, specific for this particular type of pathology at the orifice of the eustachian tube.

Blood studies should be made to ascertain that the blood which supplies this infected structure has

the healing properties which are necessary to effect a cure. The patient may be anemic, diabetic, or Wassermann positive; any of these conditions have an influence on the prognosis and should be treated. The value of osteopathic manipulative treatment in building up the general health of the body is often underestimated. While it would be foolish to make the claim that spinal manipulative treatment is a specific cure for chronic infections anywhere in the body, still it is equally foolish to maintain that osteopathic spinal lesions in the upper dorsal and lower cervical areas cannot influence the circulation to the head and thereby influence the healing processes. Well-directed manipulative therapy is of value in the management of many of these conditions. It is not a very time consuming procedure to look for lesions. When they are found, they should be corrected. Osteopathic physicians should not neglect any of the measures which may be taken to build up the general body resistance to infection. Then, and only then, can those forms of treatment which may be directed specifically at the ear be properly and favorably considered in the hope of controlling the disease.

The first of these is the careful cleansing of the ear conducted at sufficiently frequent intervals so that the ear is kept reasonably clean at all times. Any medicament placed in the ear will not be effective if accumulated debris prevents the medicine from reaching the diseased part.

After the ear is cleansed meticulously with the aid of an electric otoscope, if there are excessive granulations in any part of the ear canal or middle ear, they must be removed, as they interfere with drainage and also may, and frequently do, actually produce purulent discharge. These granulations may be safely removed by pinpoint application of 50 per cent silver nitrate or the fused chromic acid bead. Chromic acid destroys more tissue than does silver nitrate and therefore should be used when the granulations are large. Silver nitrate is preferable when the granulations are small. In either case one should be extremely careful to treat only the diseased areas and not let the caustic drug extend out into healthy tissue. If the granulations tend to redevelop and their growth is too rapid to keep under control by the above means, then one or two applications of radium implanted into the middle ear will be sufficient to inhibit the reproduction of granulation cells. Or it may be that the granulations are forming as a result of an infected pocket immediately adjacent to them. Careful curetting of granulations may give gratifying results.

In the patient who has a large perforation with white, cheesy material visible in the middle ear, I have found no other preparation as good as tincture of iodine and phenol, 5 per cent of each, dissolved in glycerin. This is dropped into the ear. The patient lies with the affected side up for some little time and then puts cotton in the ear to prevent the overflow of the excess. This home treatment is given daily. Within a few days most of the white, cheesy material will easily come away during careful mechanical cleaning in the doctor's office. It goes without saying that if the white, cheesy material is coming from a large cholesteatomatous pocket which involves a considerable area, this type of treatment will probably not be effective. The x-ray should enable one to decide whether such a pocket is present.

Several antiseptic drugs are of value if the ear drum is wide open and the antiseptic solution can reach the infected area. They should be instilled with the patient lying down with the affected side up, then worked deep into the middle ear structures by alternating pressure and suction produced by the thenar eminence of the hand. If the medicine is to be left in the ear, the patient should put a little plug of cotton in the canal to prevent the excess from running out.

Penicillin has proved to be of great value. Two preparations which I especially recommend are penicillin, 100,000 units, in 1 ounce of equal parts of 70 per cent alcohol and glycerin and 100,000 units of penicillin and about ½ dram of sulfathiazole in a vehicle consisting of 20 cc. of Quinolor jelly and 5 cc. of water. This latter solution is especially valuable in cases which have been overtreated and have developed a dermatitis medicamentosa in the ear canal.

A very effective form of treatment is the use of Mercurochrome and quartz light. I use a 5 per cent solution or sometimes a 10 per cent solution, which is mixed fresh once a week. About 8 or 10 drops are instilled into the ear with the affected side up and then worked deep into the tissues as explained above. The excess of Mercurochrome solution is then wiped out with cotton applicators and quartz light is applied into the ear canal by an orificial applicator up to the tolerance of the skin of the canal. I usually start with 1 minute of quartz light and then double the dose each time until the surface epithelium of the ear canal begins to peel. It is claimed that the quartz light will follow as deeply as the Mercurochrome penetrates. Many patients have responded very well under this form of treatment.

Glycerite of hydrogen peroxide (International Pharmaceutical Corporation) is excellent for keeping debris out of the ear and giving Nature a chance to heal. Twice a day, lying with the affected ear up, the patient instils 10 to 15 drops. Ten to 15 minutes later, excess liquid is allowed to run out and a loose bit of cotton is inserted to keep the remaining liquid from escaping.

Iodobor, which is the trade name for a powder of 2 per cent iodine in boric acid, is an old standby and still a valuable medicine. Thorough cleansing of the ear with a cotton-tipped applicator dipped in alcohol and drying the ear should precede dusting with Iodobor powder. Another powder which has proved useful in many cases is a mixture of zinc peroxide one part, sulfanilamide two parts, and sulfathiazole one part.

Two relatively new preparations which seem to offer a considerable amount of encouragement in the management of otitic infection are Dalyde (Hynson, Wescott & Dunning) which is a very valuable preparation, especially when there is a combination of dermatitis in the canal with otitis media, and Furacin anhydrous ear solution (Eaton Laboratories) which is an excellent bactericidal agent. Either solution is worked into the ear two to four times a day and a cotton plug inserted. In all cases the physician should see the patient often enough to insure that debris is removed so that the medicine can actually penetrate to the affected tissue.

Streptomycin solution is also valuable at times, although I have not found it useful in a very large percentage of cases. Some of the still newer drugs such as aureomycin and Chloromycetin will doubtless further aid in the treatment of the chronic discharging

ear, although I have not yet had sufficient experience with them to discuss their use intelligently.

When treatment with bactericidal agents fails to produce satisfactory results, one may well consider the possibility that there is a fungus infection in addition to the bacterial infection. A fungus infection in a location which is accessible to topical application will usually respond quickly to the use of Cresatin. The ear canal is filled with this substance and then a cotton pack is placed in the ear and left for 5 or 6 hours or as long as the patient can tolerate it without undue discomfort. The alternating use of a bactericidal agent and a fungicidal agent often produces spectacular results.

EVALUATION OF PROGRESS

If one form of treatment is not producing beneficial results then another form is used, and if, after a reasonable try such as 3 or 4 weeks of treatment, no evidence of definite improvement is shown, the case should be treated surgically as it is not going to respond to conservative treatment. This is because the infection is harbored in a pocket which is inaccessible to cleansing and antiseptic solutions. On the other hand, if improvement is noted, conservative treatment is continued until the maximum benefit has been obtained. To continue treatment over a long period is a mistake unless steady improvement is noted. To become discouraged and give up the treatment is an equally serious mistake as long as progress is being made even though it is not so rapid as desirable.

CONCLUSION

By the use of general systemic supportive measures combined with various forms of specific local treatment a large percentage of chronic ear diseases can be managed without surgery and with results which compare favorably with the results obtained by surgical treatment. Although 100 per cent of cure may be expected in the surgical treatment of acute mastoiditis, one may not expect 100 per cent of cure in the surgical treatment of long standing chronic mastoiditis. Some of the ears that are operated upon still need attention at intervals after the surgery has been performed. When an ear has been caused to become dry and to stay dry as a result of conservative treatment, the prognosis is fully as good as if equal results had been obtained by surgery. When it is found impossible to get an ear to become dry and stay dry with conservative measures, then surgery should be resorted to without hesitation. Further experience with the new drugs that are being developed will doubtless add to the effectiveness of medical care of the discharging ear.

3200 W. Sixth St.

Dacryocystorhinostomy

C. M. MAYBERRY, D.O., F.O.C.O.
East Liverpool, Ohio

Dacryocystorhinostomy is, I believe, an operation which justifies wider acceptance than it has received. In the state of Ohio the Department of Aid for the Aged lists extirpation as the only lacrimal sac operation for which they pay a fee. When I explained to a case worker that in dacryocystorhinostomy the sac was not removed but that a new passage was created for the tears, she simply stated that I need not expect payment unless the case was reported as extirpation. Many journals and textbooks alike merely mention the operation without describing a technic. Only the latest give any real help to the beginner. "Surgery of the Eye" by Wiener[1] is good.

My first experience with this procedure was in the case of a 9 year-old boy who had had recurrent bilateral lacrimal sac abscesses since infancy. There was conspicuous scarring over both sacs where they had been incised or had ruptured spontaneously many times. When this boy first came to my office I told his mother that only destruction of the tear sacs would cure the infection and explained that watery eyes would be a permanent result.

A few months later, I learned that there was an operation whereby an opening was made directly from the tear sac into the nose. A few days later the boy mentioned above was again brought in by his mother who said that they just came in to learn whether any newer method of treatment had been developed. After explaining that I had just heard of a new method but had not tried it, I was requested to try the operation on the worse side because no one else had offered even that much encouragement.

The operation was performed under ether anesthesia. A horseshoe-shaped flap of nasal mucosa was made anterior to the middle turbinate. Its size was about that of my small fingernail. Its base was up and back. The location was determined by measuring the distance from the nostril to the lacrimal fossa on the outside. The mucosal flap was held back by a pledget of cotton dipped in adrenalin. The field was made dry by a small adrenalin pack. A little exploratory pressure by a submucous knife blade revealed a very thin area of bone which was easily broken and picked away by the knife blade and forceps.

A lacrimal probe was then passed through the lower punctum into the sac. By manipulating the probe while observing in the nose the sac could be outlined. As much as possible of the sac wall was excised and a moderate amount of thin white pus escaped. The flap of nasal mucosa previously made was now tucked carefully into the sac and held in place by a Nu-Gauze drain packed so it filled the sac snugly. After a week the drain was removed. Recovery was uneventful. The result was good and has remained good. The only thing to remind the patient of his old affliction is the scarred area between the eye and the nose and the passage of air through the lacrimal apparatus when he blows his nose.

Eight years after this operation, following graduation from high school, this boy returned and had a similar operation on the other side. The result of the second operation is also good.

I do not wish to create the impression that this is a simple, foolproof procedure. One author who does little more than mention the operation states that it is "often successful." That is true, but there are failures. Nasal anatomy varies widely. In certain cases the area is quite inaccessible by the nasal route. Sometimes the bone is hard and difficult to remove when the contour makes visibility poor. An inadequate opening in the bone results in a correspondingly inadequate opening into the sac. After two complete failures and

other cases which required prolonged probing to keep them functioning I have abandoned intranasal approach for external approach. The intranasal approach was used for fear of external scars and of disturbing the palpebral (canthal) ligament. Both of these fears proved groundless. My two failures were reoperated successfully by the external route.

Best results are obtained in patients with a patent duct from the punctum to the sac. This portion of the system is much more difficult to repair than the nasal portion. Patients who have pustular sacs and even recurrent abscesses with rupture or incision appear to do as well as those with only obstruction and epiphora if the ocular end of the lacrimal duct can be kept open.

TECHNIC

Premedication depends on the patient and the surgeon. I use Nembutal alone or with morphine in all local anesthesia. The anterior portion of the nose, on the side to be operated, is anesthetized as for submucous resection. A tight tampon of cotton saturated with adrenalin is left in the area anterior to the middle turbinate. Posterior to this is placed a large piece of dry cotton to absorb oozing which usually occurs when the nasal mucosa is incised.

The skin is cleansed and the area around the sac infiltrated with a local anesthetic solution. I use from 3 to 5 cc. of Monocaine with epinephrine (the prepared solution is well worth its cost). Perforation of the sac should be prevented to avoid contaminating the needle. Nerve block may be used but it does not always work.

A curved incision, one third above and two thirds below the canthus, should be directed toward the anterior margin of the lacrimal fossa. This point will be found and should be noted when injecting the anesthetic. The length of incision will vary but it must be adequate for easy access to so small a field. One inch is not too long. When the fossa margin is located a semi-sharp submucous elevator is suitable for peeling the sac from the fossa floor. At this stage it should be determined whether the field is adequate and the incision enlarged if necessary. A retractor is inserted to control bleeding. After 2 drops of Pontocaine are put in the eye a lacrimal probe is passed and its position noted as the sac wall is pushed toward the fossa. This represents the upper limit of the flap which will be cut from the sac and it is from this level downward that the bony window must be made.

After identifying the sac, the fossa, its anterior margin and its lower limit, which is the beginning of the bony canal, the bony floor of the fossa is chipped away by mallet and gouge. I use a small half-round mastoid gouge and begin at the anterior margin of the fossa. Fragments of bone are picked away as they are freed and elevated by the gouge. A suitable punch forceps is useful for this purpose. There is a tendency for the floor to become depressed into the nasal cavity, which must be prevented because a good view of the field will be lost. At times it becomes necessary to support the floor of the fossa by a blunt, smooth elevator from within the nose. It is desirable to separate the fragments of bone from the nasal mucosa without perforating it. In a difficult case, especially when the bone is exceptionally heavy, this may not be possible. Perforation need not interfere with the final result, but seepage of blood into the nose and throat may be annoying.

When the fossa floor has been removed the lacrimal probe should be reinserted and the sac wall again outlined. At the superior position shown by the probe the sac wall is grasped with a small fixation forceps or hemostat. With Stevens curved scissors, beginning above the forceps, as wide a flap as convenient is cut downward to the level of the lower limit of the bony window. Exploration with the lacrimal probe is again made to be certain that the wall of the sac has been well separated except at the base.

At this point the nasal mucosa, assuming that it has remained intact, may be opened to complete the window. This may be done by a T- or H-on-its-side shaped incision. The flaps thus formed from the nasal mucosa are turned into the field of operation and held in place while the flap from the sac is carefully passed between them into the nasal space. This step must be done with care and patience so the proper relationship will be maintained while a small drain is inserted. I use plain Nu-Gauze ¼ inch wide for this purpose. A small dressing forceps is inserted through the nostril to the newly formed window where an end of the drain is placed between its jaws and drawn into the nose far enough to be found easily for later removal. If the flaps have been held in their proper positions during this procedure, they will remain so. The upper end of the drain is now cut off, leaving about 1 inch to be tucked carefully into the lacrimal sac.

After the drain is placed in the nose any retraction into the operative field should be avoided as it would almost certainly displace the all-important flap which was passed through the window into the nose. The chief function of the drain is to maintain downward traction on this flap.

Next the incision is closed with interrupted sutures. Deep bites with the needle assure good apposition with rapid healing and a minimum of scarring. The field and adjacent eye are covered with a simple dressing for 2 or 3 days. Sutures are removed in 4 or 5 days and the drain in 7 or 8 days.

After the drain has been removed irrigation should be made through the punctum in the usual manner every few days at first and then once a week for a few weeks. No probe should be passed as long as the irrigating fluid passes freely.

Operation was especially difficult in one patient because the anterior end of the middle turbinate lay opposite the lacrimal fossa. This disrupted my usual procedure, but resulted in an opening located snugly beneath the anterior end of the turbinate. Some surgeons remove a part of the middle turbinate routinely in this operation. An added difficulty in the above-mentioned case was a systolic pressure of 240 which caused troublesome bleeding and limited the use of adrenalin.

One of my patients with a perfect surgical result still has a watery eye. Blowing the nose often causes air to exit at the punctum. Irrigation of the lacrimal system is without resistance. The puncta appear normal but something is still needed to make function normal. The patient is happy because she no longer has chronic infection in the tear sac with recurrent acute exacerbations. I am glad the patient is satisfied, but still would like to know why the tears do not flow into the nose. I have considered enlarging the lower punctum, but can find no logic in doing so when it is open already.

Some patients develop obstruction following surgery and require probing once or twice a week for a long time. Patience will nearly always bring success. I seldom use larger than the No. 1 Bowman silver probe, believing that a small opening is adequate and that unnecessary trauma defeats the purpose by further formation of scar tissue with its inevitable contraction and resultant constriction.

203 W. Fifth St.

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The Bronchoscopic Diagnosis and Management of Lung Cancer

J. ERNEST LEUZINGER, D.O., M.Sc. (Ost.), F.O.C.O., F.A.C.O.S
Philadelphia

Cancer of the lung, today, has a prominent place in osteopathic medicine and surgery. It contributes 10 per cent of all adult male cancers coming to autopsy, being second only to cancer of the stomach.[1]

Whether the increase during the past 30 years in primary bronchogenic carcinoma is apparent or actual has been much discussed. The matter is a controversial one. The reported increase is probably relative rather than absolute. Improved methods in radiology and bronchoscopy, and a better pathologic concept of lung tumor no doubt account for the so-called increase. The augmented life span today affords a better opportunity to die of malignancy.

Cancer of the lung was roughly described as early as 1810. Adler reported 374 cases in 1912.[2] In 1948 Norris[3] reported 269 cases observed in the Jackson Clinic from 1935 to 1944. He stated that only 30 cases or 12.9 per cent were found operable. The fact that the majority of bronchogenic carcinomas have reached an inoperable stage before a diagnosis is established is corroborated by most thoracic surgeons. In some cases the writer has observed that delays in diagnosis could have been avoided if the indications for roentgen examination, bronchoscopy, and other diagnostic procedures had been properly appreciated.

EARLY EVIDENCE

The early clinical manifestations of bronchogenic cancer are often obscure and easily confused with a variety of common chest ailments. Cough is an outstanding symptom as are also blood-streaked sputum, chest pain, dyspnea, and wheezing. The severity of the symptoms depends on the amount of bronchial obstruction and inflammatory irritation. Norris,[3] in his discussions of early clinical features, has classified the early clinical manifestations.

The early symptoms are: nonproductive, chronic cough; cough that changes with increasing bronchial obstruction; and wheezing until obstruction is complete.

When bronchial drainage is impaired, secondary infection takes place, which is often treated for pneumonia, bronchitis, and influenza. The acute symptoms subside with treatment, but productive sputum persists and also blood-streaked sputum.

An incipient carcinoma in the main or lobar bronchus gives no abnormal physical findings and it often remains symptomless until obstruction is present. In the early stages roentgen findings may be negative.

ROENTGEN EXAMINATION AND BRONCHOGRAPHY

Roentgen examination of the chest is always indicated following an acute lower respiratory attack if the cough persists. Routine roentgen examination of the chest should always be made in cases of suspected pulmonary disease to rule out bronchogenic carcinoma. The writer has observed that in only a very small percentage of cases of early bronchogenic carcinoma were the chest films negative. In the 300 cases reported by Norris[3] only 6 of the chest films were essentially negative.

The pathology of obstructive emphysema is observed on fluoroscopy. If the obstructive lesion is in the main bronchus, the emphysematous lung contrasts strikingly with the normal emptying lung on expiration. Usually a hyperaerated lung is found on inspiration, but on expiration the pathologic lung remains distended while the normal lung empties. It is often observed that the mediastinum swings to the normal side and the diaphragm remains depressed on the involved side. Lloyd[4] has often said, "Watch out for the atelectatic segment—a tumor may be out of bronchoscopic vision."

All suspected cases of bronchogenic carcinoma should also have serial chest films every 3 months to observe any new developments. They should also have frequent bronchoscopic observation. Bronchography should be a routine in all suspected cases of lung cancer. Any and all filling defects should be carefully studied and followed by re-examination and refilling of the segment if any question arises. The obstructed bronchus may show itself on the chest film at bronchography, when bronchoscopy has failed to reveal any lesion.

The technics and method of bronchography are many and varied. At the Philadelphia Osteopathic Tumor Clinic the method of Paul T. Lloyd and the writer has proved very satisfactory. By this method the bronchial tree is filled a segment at a time, under fluoroscopic guidance, with a catheter situated in the trachea. The position of the catheter and the amount of oil injected is controlled by the radiologist. Then spot films of the specific area are taken or full-size chest films can be taken at any time. However, the full-size films are usually taken at the end of the procedure after all of the segments being observed have been filled. Discussion of the detailed roentgenological diagnosis belongs in the realm of radiology and will not be undertaken here.

BRONCHOSCOPIC EXAMINATION

Bronchoscopic examination is indicated in all patients with (1) cough, (2) blood spitting, (3) unexplained chest pain, and (4) suspicious roentgen findings.

Early bronchoscopy leads to early diagnosis and aids in determining whether or not a lobe is to be

removed or the entire lung. It gives valuable information as to the state of the carina and the trachea. The bronchoscopist visualizes the bronchial membrane directly and watches the mobility of the carina as the roentgenologist observes the diaphragm on fluoroscopy. He locates the position of the lesion in relation to the carina and removes tissue for biopsy. In 50 per cent of all cases a positive bronchoscopic biopsy can be obtained.

BIOPSY OF THE LESION

In the clinic at the Philadelphia Osteopathic Hospital from 1937 to 1947, 55 cases of bronchogenic carcinoma were observed; 23 biopsies were taken and, of these, 17 were positive for carcinoma. Many of the others had bronchoscopic findings of carcinoma.

The aspiration of material and the cytological study of cells by the method of Papanicolaou has given many positive biopsies. Aspiration biopsy by the method of Clerf has been very satisfactory and is a simple procedure when carried out at bronchoscopic examinations. That cancer can be diagnosed in an additional 25 per cent of cases which are beyond bronchoscopic vision has been demonstrated.

Since most primary carcinomas of the lung are bronchogenic, they tend to exfoliate cells into the bronchial lumen. The normal current of bronchial secretion is a constant and natural curettage carrying these cells upward in the sputum. With proper preparation neoplastic cells can be recognized in the sputum. Therefore, if cells can be seen in the sputum, then the aspiration method of collection through the bronchoscope where close proximity to the lesion gives a greater cell concentration should be a valuable aid to diagnosis. However, the method of collection of this material is of utmost importance and, if the directions of Papanicolaou are not very carefully followed, the percentage of error is great. Detailed technic of this method is in the realm of the pathologist. However, I recommend review of the article of Farber and others[5] which provides a very interesting description of this method.

Bronchoscopic aspiration should be carried on continually to give maximum lung drainage and aid in the complicating pulmonary infection. Carcinomatous tissue can be removed from the bronchial tree if necessary to obtain better drainage.

SURGICAL DIAGNOSIS AND MANAGEMENT

Surgical diagnosis may be carried out by needle biopsy and by exploratory thoracotomy. Needle biopsy has been used for several years with many complications. Jones[1] and others are of the opinion that this procedure is dangerous and should not be used. The writer is of the same opinion. An exploratory thoracotomy is the diagnostic procedure which should be resorted to in the presence of radiologic evidence of a persistent or progressive pulmonary lesion for which all other causes have been ruled out. Delay in this decision may be serious because metastasis may occur at any time. The treatment of bronchogenic carcinoma is surgical. Total pneumonectomy with resection of bronchial and mediastinal lymph nodes is the usual procedure. Contraindications to surgery are paralysis of the diaphragm or vocal cord, metastasis, pleural effusion with the presence of tumor cells in the pleural contents, and involvement of the carina and trachea. Age is no contraindication. Resectability at the time of diagnosis varies. According to Ochsner and his coworkers[6] resection is possible in one out of five patients.

It is generally recognized that x-ray therapy is palliative, to be used only for the relief of intractable pain or secondary pulmonary infection. Roentgen evidence of a segmental atelectasis is as strongly suggestive of bronchial occlusion as is lobar atelectasis. If this fact is recognized, and if every effort is made to obtain material for histologic diagnosis, many of these lesions can be proved while still operable.

SUMMARY AND CONCLUSIONS

1. Bronchogenic carcinoma is second only to carcinoma of the stomach in adult male cancers coming to autopsy.

2. Prolonged life span and improved methods of radiology, pathology, and bronchoscopy account for the apparent increase in bronchogenic carcinoma.

3. The early manifestations of a bronchogenic carcinoma depend chiefly on their point of origin, so that arbitrary classification based on location offers the logical basis for understanding the mechanism by which the early symptoms, signs, and roentgen findings are produced.

4. A complete study should include, in addition to the roentgen examination, bronchoscopy with bacteriologic study of bronchial secretion and cytologic examination in cases in which tissue biopsy cannot be obtained by bronchoscopy. In cases where diagnosis of tuberculosis is in question, sputum examination, gastric washes, and skin tests should be made; also bronchography, planigraphy, bacteriologic and cytologic examination of pleural fluid, and thoracoscopy should be undertaken if indicated.

5. Exploratory thoracotomy should be performed when clinical evidence points to bronchogenic carcinoma with negative histologic diagnosis.

6. Bronchogenic carcinoma may simulate any pulmonary lesion and should always be considered a diagnostic possibility.

1813 Pine St.

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Eye, Ear, Nose and Throat
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A Futile Attempt to Save an Injured Eye

J. WALTER LARKIN, D.O.
Phoenix, Ariz.

The morning of March 3, 1948, a boy, 4½ years old, was brought into my office with a stab wound through the cornea of his right eye. Sharp-pointed scissors being used to cut a string around a package had severed the string easily and rebounded to enter the cornea. This boy, like so many of the people who make up its population, had been brought to Phoenix because of a physical ailment—in this case it was asthma. He had had measles and chickenpox and had suffered from asthma and croup practically all his life.

As the child would not allow his eye to be opened it was not possible to examine it until after an anesthetic was administered. Ethyl chloride and ether were administered in the hospital about an hour after the child was first seen. Anesthesia was adjudged safe by the anesthetist as the asthma was quiescent and a mitral murmur which had accompanied it had disappeared.

Under strict surgical asepsis the eye was examined and the injury was found to be greater than I had supposed. The scissors point entered the eye through the cornea at its center, cut upward, and escaped just a millimeter past the corneoscleral junction at about one o'clock. The lens capsule was ruptured, accompanied by laceration of the iris with prolapse of uveal tissue from the upper part of the wound. The aqueous had escaped and there was very little hemorrhage from the iris.

The question which presented itself was this: Was the eye injured seriously enough to demand immediate removal in order to protect the other eye from possible sympathetic ophthalmia? I was forced to decide immediately and I reasoned as follows: With the new antibiotics infection is much less likely to occur and if it does occur it is much more possible to control. The lens capsule was widely cut so absorption of the lens cortex was very likely and thus a white eye would be prevented. I could not determine whether or not the ciliary body was injured. Moreover, if difficulty occurred, subsequent removal could be performed. I decided to attempt repair of the damage as well as possible—a decision which turned out to be wrong.

The incarcerated iris was withdrawn and excised with sharp iris scissors. The cornea was sutured with 6.0 silk on an atraumatic needle. At one time slight tension was put on the suture and this allowed the reposition of the severed iris. No conjuctival flap was used and the anterior chamber was not irrigated. Penicillin ointment and 1 per cent atropine sulfate ointment were placed in the eye, the lids carefully closed, and the eye protected by an aluminum shield. Fifteen hundred units of tetanus antitoxin were injected intramuscularly and 25,000 units of penicillin every 3 hours ordered. The child was then returned to bed.

The child stayed in the hospital only 3 days. Adequate sedation was given to keep him quiet and 1 per cent atropine sulfate and penicillin ointment instilled into the eye daily. Temperature went only to 99 F. Progress notes the day after operation were these: Cheerful, temperature 98.3, not complaining of any eye pain. Two days later, they were: Boy in good spirits and anxious to go home.

One blood count only was made and the findings were as follows: Hemoglobin, 78 per cent; erythrocytes, 3,860,000; leukocytes, 9,000; stab cells, 5; segmented cells, 59; lymphocytes, 34; monocytes, 1; eosinophils, 1; color index, 1.01.

No x-ray of the eye was made. No evidence of infection occurred at any time. On the fourth day after the accident the eye was dressed and the boy sent home with temperature, 98.2; pulse, 120; and respirations, 18. Daily visits were made to the office. At no time did the eye show evidence of increasing redness or pain and I was hopeful of recovery. The uninjured eye remained quiescent and entirely normal so far as I could see. It was, of course, difficult to examine the patient for he was very young and he kept his eye shut most of the time.

On the eighth postoperative day ethyl chloride was given and the stitches removed. Careful examination was possible and it revealed abatement of the redness of the eye. The anterior chamber had reformed with the aqueous clear and the iris was clear and clean but adherent to the posterior surface of the cornea at the upper end of the laceration and the lens white for 90 degrees from twelve to three o'clock. The laceration had healed nicely and the good eye was entirely without symptoms and apparently normal. There were no constitutional symptoms whatever.

The eye appeared to improve steadily. Blepharospasm lessened slowly and while the eye was kept partially closed, light projection was possible in all quadrants. An effort was made to improve the boy's nutrition and general physical status. His asthma was completely under control. On April 23, 1948, infected tonsils were removed without untoward incident.

Following recovery from the tonsillectomy instruction was given to the boy's mother to bring him to the office every 2 weeks and if any untoward symptoms occurred, to report with him immediately.

All went well until August 17, 1948, or about 5½ months after the injury. On that date the patient was brought in with complaints of pain in the right eye, lacrimation, and photophobia. The blepharospasm had returned. The boy was fairly cooperative and examination of the eye for very short periods of time was possible. Such examination showed the cornea and aqueous to be clear, the iris still incarcerated at the old scar, and the pupil irregular. The iris was not as clear as it should have been and the lens was opaque but not as white as formerly. No synechiae to the lens were visible. The eye was soft and not painful to the touch. Although it was presumed that mild uveitis was present, the eye was distinctly not red. The fellow eye, so far as I could see, was completely normal. The child was very irritable, but no constitutional symptoms existed.

Atropine sulfate, 1 per cent, was again instilled into the eye and the boy sent to the hospital where he could be watched closely. At this time the blood count showed the following: Hemoglobin, 76 per cent; erythrocytes, 3,810,000; leukocytes, 10,000; stab cells,

2; segmented cells, 60; lymphocytes, 33; monocytes, 2; eosinophils, 3; clotting time, 1 minute.

Three hundred thousand units of penicillin were administered, Nembutal, ¾ grain, was given by suppository, and cold packs were kept on the eye. The next day, the pupil failed to dilate, synechiae around the periphery of the pupil were visible, and an iris bombé had developed. The eye still showed no sign of redness, but the pain and discomfort persisted. Temperature was 98.3, pulse, 100, and respirations, 20.

Consultation was asked for and consent given. It was agreed to relieve the iris bombée by means of a buttonhole iridectomy as soon as possible. On August 19, 1948, an iridectomy was done, in the classical manner except that the incision was at nine o'clock rather than at twelve. Two close corneoscleral sutures were placed, a wide incision made with a keratome, and the iris grasped, but extraction was impossible because of the synechia. The cornea was then retracted by means of traction on the sutures, and the iris grasped by fine iris forceps and cut just under the forceps. With the cornea and iris back in place a cataract knife was passed under the incision in the cornea, through the hole in the iris, across the pupil, and through the iris on that side. Thus an opening was made in the iris at three o'clock also.

The corneal incision was closed, Topicillin and a small amount of 1 per cent atropine sulfate ointment were introduced into the conjunctival sac and the eye was closed and protected by a shield. Nembutal suppositories were used for sedation and penicillin and atropine ointment instilled daily. Practically no swelling of the eye tissues occurred and at no time was there any purulent discharge from the eye. Pain was minimal—at least the patient did not complain of it to any extent. Penicillin tablets, 50,000 units, were given by mouth every 3 hours.

The patient was discharged August 22, 1948. I still had hopes that this eye would recover to the point where it would match the good eye better than a false eye, both in looks and in movement. These hopes were soon dashed for after a week of watching it became quite apparent that the eye was not recovering, but was softening and shrinking in size. Moreover, the left eye was becoming irritable. Examination of it was difficult but I was unable to detect any pathology.

Consultation was again sought and produced the recommendation that the right eye be removed as soon as possible. This was agreed to and was done September 1, 1948. The usual surgical preparation of the eye was made. Sedation consisted of Nembutal, ¾ grain by suppository, and atropine sulfate, 1/300 grain, ½ hour before surgery.

Temperature was now 100 F., respirations, 24, and pulse, 110. Blood count showed the following: Hemoglobin, 76 per cent; erythrocytes, 3,810,000; leukocytes, 16,600; eosinophils, 3; stab cells, 2; segmented cells, 60; lymphocytes, 33; and monocytes, 2. The boy was dehydrated so dextrose, 5 per cent in saline, was given intravenously at the time of anesthesia. Ethyl chloride and ether were used.

The operation of choice was felt to be evisceration for it seemed safer to remove the uvea than to sever the optic nerve nearer the chiasma. This was done in the usual manner with the exception that the cornea was not cut around and resected but was sliced across with a spear (Bard-Parker). This was done in the hope of leaving a slightly larger mass in the socket for the plastic eye to rest upon and is according to the recommendation of Gifford.[1]

After the original incision across the cornea, the lips of the corneal wound were held apart and with a Ballenger submucous elevator the entire uveal tract was separated from the sclera and withdrawn. It was adherent around the disk. The inside of the globe, which in this case was quite soft, was carefully scraped clean with gauze held in a small hemostat. Bleeding was mild. No sutures were employed. A small square of gauze saturated with penicillin ointment was placed on the cornea with mild pressure, the lids closed, more penicillin ointment applied externally, and the eye dressed and covered with a shield.

Upon inspection of the globe internally there was a spot of pigment adherent to the sclera just posterior to the original wound which I believe was made by the scissors point. If it was, the wound was much deeper than I had either supposed or could judge.

Recovery after evisceration was uneventful. The patient was discharged in 6 days and went on to complete recovery with no untoward symptoms in the left eye. In 4 months he was fitted with a temporary false eye which looks good and moves fairly well with the movements of the sound eye. Vision in the left eye is 20/20.

As I review this case now there are some pertinent facts which it would be well to consider.

1. In the first place no conjunctival flap was made to cover the wound. It is conceded by most eye surgeons that covering a lesion of this sort with a conjunctival flap enhances the possibility of good healing.

2. The decision to enucleate or eviscerate was a difficult one. In general the indications for enucleation are these:

a. A painful eye with vision irretrievably lost
b. Possibility of sympathetic ophthalmia
c. The presence of an intraocular neoplasm

The indications for evisceration in general are these:

a. Acute suppurative processes
b. Extensive injuries to the globe
c. Subchoroidal hemorrhages with prolapse of vitreous and uveal tissue.

In view of these facts it appears that the operation of choice would have been enucleation with implantation of a globe. Most ophthalmologists consider that this operation gives a better cosmetic effect. But, according to Gifford,[1] if the cornea is not removed in an evisceration, the resultant mass forms a good base for a false eye, which will move well with its fellow eye.

With regard to sympathetic ophthalmia, its pathogenesis is not clearly understood. Certainly, the anaphylactic theory is not proved. The theory of the transmission of toxins or bacteria or both from the injured eye to the sympathetic eye by way of the optic nerve and chiasma is not proved or disproved. In my case, judging from the temperature and blood count, infection was present and therefore it seemed justifiable to sever the optic nerve as far from the chiasma as possible. By doing an evisceration the nervous tissue could be removed within the globe itself.

In evaluating the attempt to retain the eye, it may be said that there was very little hemorrhage into

the anterior chamber, which was a good sign of the possibility of saving the eye. It was impossible to determine how much ciliary damage had occurred. I believe the attempt to save an eye to be justifiable.

CONCLUSION

It may be concluded from this case that when a laceration involves the ciliary body and fibrosis results, deterioration usually follows in the form of a red, painful, irritable eye, phthisis bulbi, or atrophia bulbi.

1508 N. Central Ave.

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Otitis Media and Mastoiditis*

FRANK S. CHAMBERS, D.O.
Los Angeles

It has been definitely proved over a long period that a patient's physiological reaction to ear infections is very accurate when systemic infections are not present. The purpose of this paper is to point out the differences existing under the two conditions and to give my recommended treatment..

There is no therapeutic modality sufficiently good to permit ignoring the following rules, considerations, and recommendations for treatment in otitis media and mastoiditis:

1. Eliminate otitis externa.

2. Remember that there is no age limit and that the mortality rate is higher in infants than in adults.

3. *The time of onset of the ear infection is the most important guide to diagnosis and treatment.*

4. The blood picture presents an accurate index to the patient's condition.

5. Temperature is also a very accurate guide and variations indicate the presence of excruciating pain and distress, general complications, and intracranial complications.

6. Mastoiditis which is chronic after 18 months' duration is an indication for radical surgery.

7. Penicillin and chemotherapy should be used in all suitable cases.

OTITIS MEDIA

Before deciding that a given case of ear affection is otitis media, one should make sure that there is no infection of the external auditory canal — such as furunculosis, fungus growth, or eczema. When one of these conditions is present, it is often difficult by inspection alone to make a differential diagnosis between it and otitis media, but it is not hard to see why there is little elevation of temperature, that the whole external ear is more swollen and sensitive to the touch than in the average otitis media, and that there is not likely to be an associated acute respiratory infection. In acute otitis media it is rare not to find some respiratory infection as a concomitant. Otitis media in association with a respiratory infection provides sufficient warning that a vicious infection is present in most cases and one that is in a dangerous location for further extension.

Another important point is that otitis media and mastoiditis are common in the very young infant as well as in the very old person. Also it should be remembered that mastoiditis in infancy is vastly different as to symptoms, course, and indicated treatment from that in adults. It is far more difficult to diagnose and the mortality rate is higher, with or without surgical interference. The higher mortality is due in most instances to conditions such as diarrhea, bronchopneumonia, otogenic general sepsis, and lateral sinus thrombosis, which are usually secondary to the same condition that caused the mastoiditis, i.e., upper respiratory infection.

In diagnosis and treatment, the characteristic anatomical features of the infant eustachian tube and middle ear must be kept in mind. The tube is patulous, relatively as large in caliber, more horizontal, and only half the length of that of the adult, thereby making it easy for pus from draining sinuses or regurgitating food to enter the middle ear. The ossicles of an infant are practically the same size as those of an adult and slight inflammation (with the resultant swelling) causes them to block the aditus, thus hindering drainage from the mastoid antrum. The ethmoid cells are relatively large and well formed at birth, and the maxillary antra are usually present at an early age. Infection of these sinuses plays a large part in causing and maintaining mastoiditis, as well as the diarrhea which often accompanies mastoiditis in infants.

It is necessary to learn whether the patient has had a head cold prior to or at the beginning of the illness. A history of upper respiratory infection in other members of the family is of importance. The tympanic membrane is often red and bulging in the early stages, while later, although still bulging, it is gray and lusterless—usually on both sides. Spontaneous rupture of the tympanic membrane seldom occurs and no ear symptoms are noticed. In practically all of the acute cases with mastoid involvement that I have seen, the posterior-superior canal bulged forward and down. Subperiosteal abscesses or marked edema in the region of the mastoid are rarely found in infants. Examination of the nose and throat usually reveals some evidence of infection in the nose or sinuses and definite inflammation of the posterior nasopharynx.

Paracentesis of the drum membrane should be performed immediately if definite evidence of ear pathology is found. Conservative nose and throat treatment is indicated. The patient should then be observed for 24 hours, during which time fluids should be given by mouth, if possible. In the meantime, routine mastoid and sinus x-rays should be made and ear cultures and other necessary laboratory data procured. Unfortunately, in most instances the information obtained by roentgenography is far less important than the physical findings.

When there is a decided improvement at the end of 24 hours, which is the rule in the majority of cases, treatment is limited to careful observation and supportive measures. If the temperature remains elevated and does not go higher than 102 F. rectally and there is continued loss of weight, immediate mastoid opera-

*Written April 17, 1949.

tion is indicated. If temperature is higher than 102 F., there is a complication which may not be due to mastoiditis and must be eliminated if possible before subjecting the patient to surgery.

To keep an accurate record of a case it is necessary to know how long the patient has been suffering with the ear before the paracentesis is done, because the process of inflammation and elevated temperature continues for 5 or 6 days whether the ear is lanced on the first day or the last. In other words, the temperature can be expected to drop to normal in 3 days if the ear is lanced on the third day, or to drop almost immediately to normal if lanced on the fifth or sixth day, providing there are no complications such as tonsillitis, sinusitis, pharyngitis, or any of the common children's diseases.

From the onset of acute otitis media, treatment depends on both the subjective and objective symptoms. If the drum is inflamed and the patient is partially deaf and has pain and temperature above normal, paracentesis should be done immediately. If only inflamed membrane is found, with none of the symptoms other than partial deafness, one is justified in waiting 24 hours at least, as the condition may be due to exudative catarrh in the middle ear, which usually corrects itself with good elimination and the use of nose and throat sprays and politzerization. Following paracentesis, the chief object locally is to maintain free drainage. This is best done by irrigating the external ear canal with peroxide and boric solution, half and half, several times daily, using a small ear syringe or medicine dropper. The nose and throat should be carefully examined and appropriate treatment given. General measures consist in caring for the toxicity and dehydration which is usually present and the use of penicillin in suitable cases.

MASTOIDITIS

If the temperature does drop to normal as it should, and after 4 or 5 days begins to rise, one can be very justly suspicious of mastoiditis and look for the following signs:

1. Alteration in the amount of discharge—usually a decrease
2. Recurrence of pain in and about the ear
3. Rise in oral temperature to 101 F.
4. Tenderness over mastoid
5. Swelling of periosteum over mastoid, with diminution of its movement
6. Swelling of periosteum of posterior and superior walls of the osseous portion of the external canal (The posterior wall bulges forward and the superior wall sags.)
7. Change in blood picture indicating pyogenic infection—increase of white cells to 16,000, decrease of red cells
8. Changes shown by roentgenography:
   a. Increased opacity
   b. Anterior margin of the sinus groove showing up more markedly
9. Weber-Schwabach test — bone conduction greatly decreased on the affected side.

The presence of 30 per cent of these signs assures a 90 per cent diagnosis; 40 per cent assures a 100 per cent diagnosis.

COMPLICATED MASTOIDITIS

The temperature in mastoiditis does not go higher than 101 F. (orally) unless complicated with:

1. Exposed dura
2. Other mastoid involved, but still not a temperature above 102 F.
3. Children's disease
4. Intracranial extension
5. General sepsis.

Treatment of acute mastoiditis confines itself to the complete removal of all mastoid cells by a surgical operation. There are no exceptions to this rule. This operation should be done within 6 weeks from the onset of the disease. My reason for making this statement is that the perforation in the tympanic membrane must be closed. This positively cannot be done as long as there are necrotic mastoid cells present. Also, the longer an ear discharges, the more difficult it becomes to close this perforation. If the perforation persists, nature herself will attempt to do a radical mastoid operation as the years go on by ingrowth of the epidermis from the external auditory canal through this opening into the middle ear, the mastoid foramen, and on into the mastoid cavity. Unfortunately this effort on the part of nature fails ninety-nine out of every one hundred times because one of many pathologic changes takes place.

One of these changes is pressure necrosis through the advancement in the middle ear of the epidermis or the formation of cholesteatoma, that is, the ingrowth does not proceed smoothly but dies off and the exfoliated epidermis is retained as foreign matter and promotes irritation and aggravates the otorrhea. The retained secretions are prone to putrefy as a result of the admixture of pus, exfoliated epithelium, and infection by an endless variety of micro-organisms. New growths develop and tend to force the infection further inward or cause pressure necrosis by closing off the normal blood supply to the temporal bone. To me this is the most important factor in explaining the reasons for such complications as purulent labyrinthitis, middle-lobe abscesses, lateral sinus thrombophlebitis, meningitis, and cerebellar abscesses.

ACUTE MASTOIDITIS IN ADULTS

In many respects the signs and symptoms of acute mastoiditis in adults are somewhat different from those which are found in children. In adults one may not find restricted movement of the periosteum over the mastoid area, tenderness or swelling over the mastoid cavity or facial nerve ridge, or a sagging of the posterior external auditory canal. X-ray pictures are likely to show positive signs, but cannot be depended upon unless definite clinical signs and symptoms are also present. These include oral temperature varying from 99 to 101 F., characteristic history, dull headache, positive Weber-Schwabach test, and blood count with leukocyte count ranging up to 16,000. If acute mastoiditis is present, at least enough of these signs and symptoms will be found to make a diagnosis in ninety-nine out of every hundred cases.

The treatment is surgical and should be undertaken within 6 weeks from onset of the disease. Statistics show that risks increase from that time on, with or without surgery. It is quite impossible for any physician to predict the final results in any case not operated on in the acute stage. It has been my lot to care for several fatal cases in the past 20 years at the Los Angeles County Osteopathic Hospital. None of them had a chance by the time they were brought to the institution; all had histories of discharging ear or ears, ranging from 2 to 30 years.

Much could be said about the conservative treatment of chronic otitis media and mastoiditis, but I

know of no treatment which is considered a cure. It is true that we succeed in drying up many of these ears for the time being, but I never feel satisfied with the results.

When resorted to, operative treatment, as I see it, consists of a complete radical mastoid operation. The perforation is in the drum membrane; the ingrowth of the epidermis has taken place within the middle ear, followed by the formation of cholesteatoma which has occurred with the death of portions of the epidermis. The patient's life is in jeopardy as long as this condition exists. It cannot be permanently eradicated without elimination of the middle ear cavity and development of new epidermis over the whole area to insure proper nourishment to that portion of the temporal bone. I have had the opportunity to examine a great number of cases operated on as long as thirty-five years ago without any recurrence of the ear condition, which is sufficient evidence that the results of a complete radical mastoid operation will prove satisfactory as long as the patient lives, if properly done. On the other hand, I have had to operate on a number of cases that had been previously operated on by the conservative method.

Penicillin and the sulfa drugs have a spectacular effect on early ear infections because of a copious blood supply, due to the fact that the mucous membrane of the sinuses, nose, and postnasal pharynx is continuous with the eustachian tube and middle ear. Penicillin or sulfa powder should be routinely used in the wound after any mastoid operation if patient is not allergic to them. Also 20,000 units of penicillin should be administered intramuscularly every 3 hours for a period of 3 or 4 days.

893½ S. Lucerne Blvd.

Difficulties in Cataract Surgery

EDWARD D. HERSH, D.O.
Weirton, W. Va.

Cataract extraction is one of the more frequent surgical procedures in ophthalmology. Ordinarily, the operation proceeds smoothly and the end results are gratifying. However, there are times when all does not go well and the surgeon is faced with a problem to which he must have an immediate answer. This paper is written to review the problems of cataract surgery.

Spaeth[1] states, "The complications, which are possible, following cataract extraction are the greatest in number for any type of surgery regardless of the realm of surgery in which the technique may lie." He then proceeds to list thirty-four complications.

Many of the difficulties in cataract surgery may be prevented before and during the operation and this paper will deal primarily with the latter. The indications, preoperative treatment, various surgical procedures, and postoperative care will be dealt with lightly or not at all, not because of their relative unimportance, for they are most important, but because they each would require a paper of the length of this one or even longer.

In general, all those things which make for successful surgery elsewhere are applicable to cataract procedures. It is much better to operate upon a patient whose diabetes has been controlled and whose hypertension has been reduced to a safe limit. The patient should be in as good condition as is possible, and the eyes and surrounding structures should be free from infection. If the patient has faith in his surgeon and in the surgical procedure, he can be most valuable during the operation when his cooperation may spell the difference between success and failure.

Difficulties at the time of operation may be encountered with the incision, the iris, the lens, and the vitreous.

DIFFICULTIES WITH THE INCISION

An incision may be made erroneously by faulty technic or because of movement of the patient. Faulty incisions may be made within the cornea or in the neighborhood of the ciliary body. If the incision has been made through the cornea and the error noticed on counterpuncture, the knife may be withdrawn and the operation postponed. Corneal incisions are usually small and should be enlarged to facilitate the lens delivery. The preparation of a sliding conjunctival flap to be sutured over the incision may be necessary.

If the incision has been made in the area of the ciliary body, it is usually a fault of counterpuncture which may result from edema of the conjunctiva or from improper fixation of the eye. Should this occur, hemorrhage into the anterior chamber usually results. Often it is possible to direct the knife in such a manner that the remainder of the incision is proper. Hemorrhage should be arrested and irrigated gently from the anterior chamber before the operation is continued. The incision may include iris or lens. They will be mentioned again later. Improper incision may result in astigmatism or delayed healing.

DIFFICULTIES WITH THE IRIS

The iris may fall in front of the cataract knife and suffer damage as slight as being superficially punctured or as great as being cut to the extent of complete iridectomy. It may be caused by sudden loss of the anterior chamber during counterpuncture or to a very shallow anterior chamber. Spaeth[2] suggests that perforation is not necessarily harmful but that further cutting be delayed for a moment. Another procedure suggested is pressure on the cornea just behind the knife with a moist sponge, depressing the diaphragm of the iris and the lens. If this does not free the blade, the incision must be completed and the iridectomy accomplished as neatly as possible. Naturally, this is not a desirable situation, but if it does happen, the experience of Wiener[3] is encouraging. In making his incision for complicated cataract where the iris is adherent to the lens, he includes the forward protrusion of the iris and lens and cites that the only disadvantage in this method is that a very large piece of iris is included with the incision, sometimes half, but that he has never seen any harm come of it. If hemorrhage should occur, which is not unlikely, it should be irrigated gently before clot formation.

An accidental iridodialysis may occur during iridectomy and the surgeon should be on the alert lest the patient move his head or eye. It may also occur if the iris forceps are pulled before completely severing the iris. Wiener[3] tells of an operation he observed per-

formed by a nationally known surgeon. At the instant the iris was grasped the patient moved and the surgeon discovered that the entire iris was hanging from his forceps.

Prolapse of the iris is a very unwelcome complication of cataract surgery whether it be present during the operation or manifests itself as a late complication. It may result in delayed closure of the wound, astigmatism, staphyloma, or striate opacity of the cornea and it predisposes to infections which ultimately result in glaucoma and destruction of the eye.

It is desirable to retain a round pupil in intracapsular work; however, the incidence of iris prolapse is much higher when a complete iridectomy is not done. The chief purpose of iridectomy in cataract surgery is to prevent iris prolapse into the wound. Blake[4] suggests that peripheral iridectomy minimizes prolapse because the sphincter remains intact and the tendency for the cut iris to float up into the wound is eliminated. He recommends that peripheral iridectomy be performed after lens extraction so as to prevent the lens from going through the new opening or being caught in it. Safár,[5] however, thinks that peripheral iridectomy should be completed first, since after extraction the vitreous lies just behind the iris and in the pupil and may be injured or become prolapsed when the iris is handled.

Difficulty with the iris is likely to arise when peripheral iridectomy is performed and difficult lens extraction encountered. Peripheral iridectomy is contraindicated when the sphincter is rigid and does not dilate well, in cases of fluid vitreous, posterior synechiae, et cetera. Persistent prolapse before lens extraction should be treated by iridectomy, either peripheral or, preferably, complete. Stallard[6] suggests that postoperative prolapse is most common when iridectomy was omitted when there was difficulty in replacing the iris at the end of the operation and is not so apt to occur in well-coapted corneoscleral cases.

Later prolapse or incarceration of the iris is due to the sudden reopening of the wound into which the escaping fluid draws the iris. If this complication is discovered early in the postoperative period, the iris should be replaced. If it prolapses again it should be excised. Stallard[6] feels that surgical intervention is necessary. He offers this distinction: if the iris is caught in the lips of the wound, but not through them, returning the iris to the anterior chamber is justifiable; if the iris has come through the incision, abscission is necessary. Zeeman[7] states that "When a prolapse of the iris occurs and is recognized immediately (following operation . . .) the conjunctiva should be undermined, the iris exposed, pulled outward and cut off and the wound covered with the neighboring conjunctiva. This is an emergency operation which may not be delayed."

In accidental iridodialysis it is possible to stroke the iris back into the angle so that it may not even be noticed after healing. However, the defect may progress from day to day during the postoperative period. In a complete iridodialysis nothing can be done except to have the patient wear pin-hole glasses or an artificial pupil contact lens.

DIFFICULTIES WITH THE LENS

A sufficiently large incision, a properly dilated pupil in a well-anesthetized patient, and a well-selected procedure facilitate lens extraction. If the incision is not adequate, it should be enlarged. To attempt to extract a lens through an opening too small for it to pass would be disastrous. If the pupil is too small, which is sometimes the case in elderly patients where it will not dilate fully because of sphincteric changes and possibly the loss of elasticity of the stroma proper, or a posterior synechia, or the presence of a very shallow anterior chamber, it may be well to do an iridectomy first and later extract the lens. Attempts to remove a lens through too small an opening, either in the iris or the incision, may result in injury to the cornea, iris, and vitreous.

Tearing the capsule in an intracapsular operation may be due to improper application of capsule forceps, forceful traction, or poor choice of operation. The capsule is thickest just in front of and behind the equator of the lens and thinnest at its poles. Therefore polar applications are conducive to capsule tearing. Difficulty in applying the forceps may arise if the instrument is held obliquely so that one arm rests against the capsule while the other is a greater or lesser distance away in the anterior chamber.

If it is possible, it would be well to determine preoperatively with the biomicroscope the state of the capsule and lens. If the capsule is thick and the lens hypermature with a probable coexisting friable and weak zonula system, tearing of the capsule would be minimized. Should the capsule appear thin and distended, tearing is probable and perhaps an extracapsular operation would be preferred. Should the capsule tear during intracapsular extraction, an extracapsular operation must be done. The capsule may give way later in the course of tumbling the lens. Stallard[6] applies a sharp hook to the nucleus and rotates it out of the incision. He, where possible, removes fragments of capsule with straight, delicate forceps after first closing the corneoscleral suture but he cautions against injury to the vitreous face during these manipulations. A grave iridocyclitis may result from retention of the nucleus or any great amount of cortex. The unfragmented nucleus should be irrigated, stroked, or removed from the anterior chamber with a loop. Spaeth[1] suggests piece by piece removal of a fragmented nucleus with smooth forceps and as much cortex as is possible by spoon, hook, stroking, and irrigation. This must be performed with great care. He cautions, "The stirring up of vitreous, retained nucleus, and of cortex to an emulsion is not conducive to satisfactory postoperative results."

The opening resulting from accidental tearing of the capsule is seldom sufficient to permit easy extraction of the lens. It should be enlarged and the forceps withdrawn from the incision in such a manner that the separated piece of capsule does not become lost in the anterior chamber.

A most unhappy complication is that of dislocation of the lens. Occasionally, in patients with hypermature lenses and weak zonular systems, even the slight trauma of section or the application of the fixation forceps may cause the lens to dislocate and sink into the vitreous. If this occurs, no attempt is made to remove it. The corneoscleral incision is closed and dressings applied. Should the lens appear in the pupil at a later date, loop extraction is attempted.

A forceful stream in irrigating the anterior chamber or energetic manipulation and improper direction in delivering the lens may force it into the vitreous. Pressure of the squint hook below should never be higher than the center of the cornea, for the lips of the incision may close and the lens be forced into the

vitreous. Knapp[8] suggests digital pressure against the eyeball deep in the inferior cul-de-sac to elevate a partially dislocated lens so that it will again present itself in the coloboma of the iridectomy. If the pupil is well dilated the dislocated lens may be floated by the above maneuver. If it cannot, an iridectomy should be performed, followed by loop extraction. Loop extraction is an emergency procedure and the lens loop should always be on the table during all cataract procedures. A technic suggested by Clark[9] may be attempted. He places sutures on the scleral attachments of the extraocular muscles and lifts up on these. This gives the effect of a fluid-containing sac suspended by four strings. Sometimes the lens floats to the top and may be removed without great danger to the vitreous face.

DIFFICULTIES WITH THE VITREOUS

The presence of intraocular disease, dislocation of the lens, complicated cataract, and some congenital anomalies possibly may cause the loss of vitreous; usually it is the fault of the patient or the surgeon. Vitreous does not flow out, unless it is fluid; it is pushed out. Too great pressure from the fixation forceps, in irrigating the anterior chamber, in manipulating within the eye, utilizing the squint hook on the cornea, or from squeezing by the extraocular or orbicularis muscles, may force vitreous out of the eye. All those things which make for easy extraction of the lens minimize the danger of vitreous loss. Too small an incision or too tight a sphincter requires forceful delivery of a lens, if delivery is possible, causing injury to the vitreous with its consequent loss. An attempt to perform an intracapsular extraction in the presence of resistant zonula or in a young patient may result in vitreous loss. Movement of the patient, high myopia, a small eye in which canthotomy has not been performed, hypertension, diabetes, old iridocyclitis, protrusion of the iris, and too wide dilation of the pupil with consequent exposure of the vitreous face around the lens may all contribute to vitreous loss.

Stallard[6] feels that a loss of vitreous exceeding two minims is very serious, but that the loss of fluid vitreous is of no great consequence since it is replaced by aqueous. The penalties for vitreous loss may be a distorted pupil, low intraocular tension, iridocyclitis, subretinal or choroidal hemorrhage, retinal detachment, phthisis bulbi, sympathetic ophthalmitis, and expulsive evacuation of the contents of the eyeball.

In general it would be well to follow the principles quoted by Spaeth[1] in the management of vitreous loss: a stage of repose for the mutilated organ, an effort to save the eye by exact suturing of the wound, safeguarding the function by freeing the pupillary aperture to a point of a black pupil, regulating the position of the iris, and, last, assurance of cicatrices by prolonged binocular bandage even for 6 or 8 days. Spaeth[1] feels that more eyes are saved by remembering these principles of treatment and the possible complications than by any complex manipulations. The speculum should be removed and bridle sutures released immediately on the presentation of vitreous. The upper lid should be held away from the cornea. A few minutes' wait should be allowed for the tissues to adjust themselves, during which time Clark[9] recommends prayer, and then the sutures closed. Incarcerated vitreous is then cleaned from the incision. The vitreous is formed of a delicate fibrillar framework containing interspaces in which lie the fluid. Therefore, presenting vitreous should be cut to divide the fibrillae and not pulled from the incision. Additional sutures may then be necessary, followed by a binocular dressing.

The importance of iris and vitreous prolapse is that so many times, if nothing else happens, there follows a slow progressive haziness of the cornea.

HEMORRHAGE

Hemorrhage in the anterior chamber immediately following surgery is usually of no consequence and absorbs without treatment. Hyphema occurs later and may be the result of trauma. This does not absorb promptly and may cause difficulty. It is sometimes seen in diabetics and nephritics or in patients with low-grade iritis or iridocyclitis. It is initiated by pain and may occur following routine dressing. The blood cells gravitate to the bottom of the anterior chamber and the chief danger is from the organization of fibrin which may produce disastrous effects on the iris. Atropine should be used. Dionin may speed absorption. Calcium and iodides are recommended. Heat may be helpful. Stallard[6] suggests paracentesis if corneal staining or glaucoma threatens.

Clark[10] uses the following regime for blood in the anterior chamber and is quite enthusiastic about its effect:

1. Give 500 cc. of 50 per cent glucose intravenously. Use large caliber needle with rubber cannula to syringe.
2. Stop all food and fluid intake except as ordered.
3. Give 2 ounces of white Karo syrup with 3 ounces of fruit juice or water every 3 hours during the day and every 4 hours during the night.
4. Give 100 mg. of ascorbic acid twice daily by hypodermic.
5. Where hemorrhage is being controlled, give 5 mgs. of synthetic vitamin K by hypodermic daily.
6. Control pain with opiates by hypodermic.
7. Give barbiturates by hypodermic for rest and sleep.

Clark[10] cannot explain how this regimen works but is emphatic in his enthusiasm. It is obviously a glucose dehydration routine and is contraindicated in diabetes.

Hemorrhage is best controlled during the operation. If the conjunctival flap is made before section, conjunctival bleeding should be stopped with adrenalin and cotton packs before proceeding further. Should bleeding be encountered as a result of trauma to the ciliary body or iris during incision, it should be irrigated gently from the anterior chamber before clot formation and before lens extraction. All of those things mentioned before which prevent trauma when the lens, the iris, or the vitreous are dealt with should be practiced to prevent hemorrhage. A good tight coaptation of the incision minimizes hemorrhage.

Subretinal or choroidal hemorrhage at the time of operation usually follows vitreous loss and usually means the loss of the eye. It is associated with vascular pathology and results from the sudden changes in intravascular and extravascular pressure. It is better to eviscerate immediately than to subject the patient to another operation. Prevention is the outstanding treatment. Ziegler[11] recommends the use of sodium nitrite, venesection, and retrobulbar injections of novocain and adrenalin. Clark's glucose dehydration treatment mentioned before may be tried. However, the eye is usually lost.

Time does not permit a discussion of the many later complications such as cystoid cicatrix, delayed

closure of the wound, sympathetic ophthalmia, late rupture of the wound, postoperative glaucoma, secondary cataract, et cetera.

SUMMARY

Various difficulties of cataract surgery are discussed and some principles of their management given. Emphasis is placed on the prevention of these complications at the time of surgery.

3101 Main St.

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The Lacrimal Apparatus

L. V. CRADIT, D.O.
Amarillo, Tex.

Considered in its entirety, the lacrimal apparatus is a complicated structure, both anatomically and functionally. Its physiology has two aspects, that of the secretory glands and that of the system of ducts and sac to collect and dispose of the secretions after they have completed their necessary office with reference to the exposed surfaces of the eye.

In the economy of function it is necessary to have the exposed areas of the eye and its conjunctival membranes constantly bathed by a fluid. This is accomplished by the lacrimal gland and its accessory glands. Normally they secrete just enough fluid to moisten the eye properly but can greatly increase their production when required by the influence of various irritants to do so.

In comparison, there is a much smaller percentage of deranged function of the gland than of the collecting and disposal apparatus. A few hypertrophied lacrimal glands due to the various irritants and catarrhal inflammations are observed but most cases occur in later life and some of these may be malignant. Such hypertrophy may be associated with pathology of the lymph glands and the parotid and submaxillary glands. Some authorities describe a glandular condition, called Mikulicz's disease, in which suspension of function of the gland results, leaving a dryness of the conjunctiva and cornea. Abscesses and fistulas of the gland may develop and some of these abscesses may resemble orbital cellulitis.

From 80 to 90 per cent of the affections of the lacrimal apparatus involve the sac and ducts. These are the various stages of acute and chronic dacryocystitis, abscesses, and fistulas, and may persist for a period of years before the patient applies for relief. These conditions are largely the result of poor drainage or inferior function of the system. Chronic dacryocystitis is the most common pathology present.

Obstruction is the most common etiologic factor present in most of the conditions affecting the lacrimal sac. This results from the extension of a catarrhal condition in the nose or occlusion of the nasal end of the duct by tumors, polypi, enlarged turbinates and deflected septa. Obstruction may follow fracture of the facial bones or fracture of the nose. It may be the result of coagulation of the lacrimal fluid, which is albuminous, within the sac or ducts. Allergy may be a factor.

Obstruction may result also from strictures which are liable to form at the normally narrow areas of the duct, namely, the junction of the sac and duct, and at the nasal outlet. Inflammation of the valve of Hasner, which is the flap of mucosa guarding the nasal orifice and acting as a valve, may contribute to the obstruction.

Recalling that the entire lacrimal duct is lined with mucosa covered by columnar epithelium and that this is ciliated to some extent, one may reason that infection, trauma, or anything affecting this mucosa and its ciliary action can contribute to poor drainage or complete blocking, especially at or near the nasal end of the duct.

Since the mucosa of the upper end of the duct is continuous with the conjunctival sac, one would expect a continuation of infections of the conjunctiva to extend downward. Likewise, since the mucosa of the lower end of the duct is continuous with the nasal mucosa, it follows that the duct may be heir to the many forms of infection involving the nasal mucosa.

There is a close relation of the tear ducts to the anterior ethmoid cells and also the agger nasi cells. Extension of infection and suppuration from these cells may involve the lacrimal duct and sac. The nasolacrimal canal is very close to the maxillary sinus, and suppuration in this sinus can extend through the thin osseous lamina separating the two structures and produce infection in the lacrimal tract. Neglected abscesses of the sac are prone to rupture and where this occurs a fistula will be the likely result.

From this resume of the numerous causes of pathology, it is easy to understand the many cases of deranged structure and function involving the lacrimal apparatus and the wide variety of treatment advocated. No attempt will be made here to outline the complete treatment and surgical procedures in use.

In most cases of chronic dacryocystitis with swelling or tumor formation or with a fistula, the treatment of choice is removal of the lacrimal sac followed by enlargement and curettage of the nasal orifice to insure adequate drainage. In the cases where a fistula exists this may not suffice, and the necessity

for improved and prolonged drainage may be indicated. A case referred to me a few years ago illustrates an abnormal condition that may be encountered.

A young woman with moderate swelling in the sac region and a fistula that had persisted since she was a small child was operated with the intention of using the usual technic. After the sac was removed, an attempt was made to probe and curette the nasal orifice. This orifice, after thorough exploration, could not be located and it was concluded that there was a congenital absence of this opening. A trephine starting at the most dependent portion of the canal was done, extending through the osseous wall and entering the nostril under the inferior turbinate. A very small catheter was inserted, incorporating one end in the dermal closure to hold it in position, the lower end extending into the nose. After irrigation through and around this drain for a period of 10 days and the use of a sulfathiazole solution which was the vogue at that time, there was healing of the tract, disappearance of the chronic infection, closure of the fistulous opening, and improvement of the epiphora. The drain was removed, allowing complete healing of the incision. The epiphora had ceased and the fistula had remained closed when the patient was observed several years later.

From this brief outline of the function and structure of the lacrimal apparatus, one is impressed by the importance of a thorough knowledge of the anatomy, physiology, and pathology of this system, and also by the many abnormalities that may be present in one or more parts of this complicated dual system of secretion and drainage. Nature, of necessity, provided a protective lubricating fluid to protect the exposed surface of the eye, and, furthermore, a drainage system to remove the excess fluid.

Here in the economy of the body, then, is a system that is largely taken for granted by the individual and his physician. No one is concerned so long as it functions, and little thought is expended or effort made toward preventing the abnormalities of structure or function that so frequently are encountered. There should be a profitable field in research applied to the lacrimal apparatus and its many problems.

709 West 10th St.

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Allergic Sinusitis

LAWRENCE M. BELL, D.O., F.O.C.O.
Marietta, Ohio

In recent years the existence of an allergic state as an etiological factor in many sinus and nasal conditions has been brought with increasing frequency to the attention of the profession and the laity.

Allergists and rhinologists differ in opinion as to whether the hyperplastic form of sinusitis is due to a sensitization to airborne substances and to foods or whether it is due primarily and solely to an infection.

Fundamental nasal allergy in which a secondary sinusitis has developed is a condition which has plagued the rhinologist since the inception of the specialty. The pathology may start as an acute allergic rhinitis and develop into an acute allergic sinusitis. During this stage alternating nasal stenosis due to an increased turgescence of the intranasal tissues develops. This stenosis varies with the allergic concentrations in the air and in the blood stream, because of the ingestion of certain foods. Excessive intranasal tissue turgescence is a constant finding.

The acute stage is usually followed by the subacute stage with stagnation of tissue fluid in the sinus mucosa. This condition may continue for years and renders the individual very susceptible to recurrent sinus infection. It is often associated with recurrent attacks of bronchial asthma.

In acute or subacute sinusitis the pain and tenderness are not referred; they occur immediately over the involved sinus. In allergic sinusitis, however, reference of pain is common in a distribution that cannot be explained on the basis of the known distribution of the sensory nerves. These patients have often been subjected to much treatment both medical and surgical. They present themselves to the physician with the self-diagnosis of sinus headache. Obviously, however, since these headaches are not seen in sinusitis uncomplicated by allergy, the allergy rather than the infection is responsible for the symptoms.

Chronic allergic sinusitis arises from long continued retention of excessive tissue fluid and is usually accompanied by infection with fibrosis and polypoid formations from the tissue spaces. When extensive fibrosis and polypoid degeneration of the mucosa have occurred, surgical intervention is justified. Only in those cases of allergic sinusitis in which obstruction exists to the point of interfering with drainage, or in which the entire picture is definitely complicated by infection should surgery be considered.

Chronic sinusitis responds readily to properly directed surgical management, but the difficulties in securing relief in this condition through surgical procedures must also depend on a diagnosis of the allergic state. For this reason, the recognition of the allergic background in these cases is of paramount importance. Relief will not be secured until the necessary surgical procedures are combined with adequate treatment directed toward relieving the functional disorders of the nasal and sinus tissues.

Allergic states are among the most important systemic conditions responsible for an ill-functioning nose, and failure to recognize their presence accounts for many surgical disappointments, especially if there is a combination of allergy and infection. Allergic

sinusitis is a definite disease, which may occur with or without secondary infection. The diagnosis of this condition depends upon careful consideration and correlation of the data which follow.

A positive family history of some form of allergy, such as hay fever, asthma, urticaria, angioneurotic edema, or eczema is very significant. There has long since been definitely established "a hereditary trend" in the transmission of the allergic state.

In addition to the usual symptoms of sinusitis, such as postnasal drip, morning cough, and head pains, patients with allergic sinusitis frequently complain of paroxysms of sneezing and intermittent nasal obstruction. The intermittent obstruction, varying from partial to complete, involves either one side of the nose or both. While usually the discharge is profuse, thin, watery, and serous in character, occasionally it is thick and mucoid. Only when an infection is present does the discharge become thick, tenacious, and purulent.

Nasal examination discloses a pale, grayish white, or bluish gray, edematous and watery mucous membrane which is characteristic of allergy. Frequently, the mucosa is so very sensitive that the slightest touch of a nasal speculum or tip of a spray initiates a paroxysm of sneezing. Hypertrophy of the turbinates and thickening of the mucous membrane as a whole, with the presence of mucus and polyps, are common occurrences. An eosinophilic infiltration throughout the stroma in large numbers, particularly near the surface, is a constant observation in these cases.

Nasal smears in allergic sinusitis establish the presence of eosinophils in far larger numbers than normal. The process of making a nasal smear is so simple and easily performed that it should always be included in routine office examinations. Sinus washings may also disclose a large percentage of eosinophils, while a blood eosinophilia completes the picture. Repetition of the examinations of both nasal secretion and blood is frequently necessary to establish the presence of eosinophils, since they vary in number from day to day.

As previously stated, disregard of the allergic factor in sinusitis is responsible for the frequency of much sinus surgery failure. When one considers that x-ray interpretations are based solely upon variations in tissue densities without respect to etiology, it is apparent that surgery should not be advised on this evidence alone. The degree of opacity in an x-ray depends upon the amount of secretion and the edema or thickening of the lining sinus membranes due to the presence of granulations or polyps. In no way do x-rays reveal the cause of the pathology.

Whereas x-ray studies possess the advantage of penetrating all the paranasal sinuses, transillumination is reliable for examination of the frontal sinuses and antrums only. Nevertheless, transillumination is valuable. It is always available as an office procedure, entails no expense, and can be repeated indefinitely. As with x-ray pictures, transillumination gives presumptive evidence of diseased conditions but no special information regarding etiology.

Predisposing causes and contributing factors to allergic sinusitis are deviated nasal septums; contact with airborne irritants; dietary indiscretions (probably with a preponderance of carbohydrates); sensitivity to certain foods, of which the more common are eggs, wheat, nuts, and chocolate; deficiencies due to mode of living, including lunch-counter diets consisting of "sandwiches and cokes," and poor elimination.

Positive skin tests not only indicate the allergic state of an individual but are also a clue to the cause as well. Intradermal skin tests are preferable to scratch, particularly in allergic sinusitis. A patient must be very sensitive to produce a positive test by means of the scratch method of testing, whereas intradermal skin tests pick up the slight sensitivities far more accurately. All skin reactions must be substantiated by clinical tests. For instance, when foods are suspected, despite negative skin tests, it is frequently necessary to utilize trial or elimination diets.

The character of the nasal and sinus epithelium varies with such environmental influences as smoke, dust, and temperature. Repeated acute exacerbations also produce marked changes. Because degeneration and regeneration of the tissues are constantly taking place, various degrees of hyperplasia are noted. In allergy, the size of the individual epithelial cells is increased and edema of the mucosa is present. Although the epithelium is not so thickened in allergy as in infection, the basement membrane frequently shows a distinct tendency toward thickening and there is an associated eosinophilic infiltration.

The use of Benadryl, Pyribenzamine, and other antihistaminics is a valuable contribution in symptomatic control over several allergic disorders but these drugs are not a substitute for a complete history and physical examination, adequate laboratory procedures, skin tests, and x-rays of the sinuses, or anything conducive to a complete allergic study of the patient. The neglect of these basic procedures is apt to become a most serious disadvantage resulting from the introduction of the antihistaminic drugs. These drugs are no substitute for desensitization to an offending allergen or other appropriate treatment and should be considered only as a valuable aid in any allergic regimen.

Once the diagnosis of allergic sinusitis is made, even before the essential causes are actually discovered, the following suggestions to patients are generally advantageous:

Carefully avoid all contact with dust, as this is a very frequent cause of allergic sinusitis.

Avoid contact with household pets.

Remove all blooming plants and flowers from your home.

Refrain from the use of cosmetics that contain orris root.

Avoid the use of insect powders and sprays.

Use a kapok mattress and pillow instead of feathers or hair.

Avoid fresh paint and varnish odors.

Keep out of drafts. Avoid cross ventilation. During inclement weather, protect yourself with proper clothing. Take no chances; at the first sign of a fresh cold remain indoors in a moderate and constant temperature.

Take no very cold or very hot baths or showers. Tepid baths are preferable.

Adhere strictly to the diet as prescribed.

Do not use any nose drops other than those prescribed.

Do not overexert yourself. Avoid excitement, fatigue, emotional disturbances, or worry.

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Extracapsular Tonsil Tissue

Its Location and Treatment

H. D. TAYLOR, D.O.
Denver

The subject of discussion in this paper is lymphatic tissue other than the tonsil proper, hereafter referred to as the faucial tonsil. The anatomical discussion will be brief, except to the extent that it locates the subject of this paper.

The faucial tonsil is usually described as an oval mass of lymphoid tissue having a capsule. This capsule confines the faucial tonsil into a firm mass. It is composed of a dense connective tissue layer through which the arteries and veins pierce to furnish the arterial and venous blood supply to the tonsil proper. Some descriptions designate the lower appendage to the faucial tonsil as the lingual tonsil which is closely related and conjugated with the edge and base of the tongue.

This lingual tonsil mass, in most instances, is one of the most important of the structures involved. This, in reality, is another tonsil loosely connected with the ovoid or faucial tonsil by a fibrous connective tissue band. The proximal attachment is usually tightly connected with the edge of the tongue at its posterior third with a very thick fibrous band. It may be observed that in some cases this lingual tissue is of relatively enormous size compared to the faucial tonsil, being as much as one third the size of the latter, while in others, as in children, it may be constituted of only three or four globules of lymph tissue. The latter are just as great potential trouble makers as the larger masses.

Each type and size of these masses, if not removed with care, may cause eventual dissatisfaction with a tonsillectomy. A portion of unremoved tissue has the ability to become enlarged, infected, or both and to cause as great discomfort to the patient as if he had never had a tonsillectomy. The four, six, or eight globules of lymph tissue can be seen to have their own crypts and canaliculi. After an ordinary tonsillectomy, they derive a new blood supply and growth stimulus in an endeavor to accomplish the duties of the tonsil that was removed above. This will be discussed later.

The next masses of lymphoid tissue to be considered are the extracapsular fragments above the faucial tonsil. The faucial tonsil has a so-called capsule, and on dissection a clean, smooth capsule usually denotes a perfect removal. For the sake of clarification, some anatomical points will be discussed here. The capsule of the tonsil is in reality one layer of a fibrous sheath, which is closely adherent to the faucial tonsil and defines its shape and size. On dissection, the fibrous connective tissue sheath is split, allowing the thinnest and weakest portion to remain. This covers the superior constrictor muscle which is the boundary of the lateral wall of the fossa. It is the potential space, between the two layers usually held together by loose areolar tissue, that harbors some extracapsular fragments of lymph tissue. These fragments of varying size are important. There is the puzzling problem of an abscess or infection of the space above the tonsillar fossa after an apparently clean tonsillectomy, which in many cases may be due to infection of these remaining masses or fragments of lymphoid tissue.

In a large percentage of throats of both children and adults there will be found a fragment of lymphatic tissue varying in size from 2×2 mm. to 10×10 mm. These fragments lie externally to the capsule of the tonsil and are located at the superior pole of the faucial tonsil. Often they will be discovered just under the fold of tissue forming the plica semilunaris and in many cases they are very closely adherent to that fold of tissue. In others the mass or fragment will be found to lie directly at the superior pole. Its tendency is to insinuate itself back into the second layer of the fascial sheath and there repose to become a tonsil tag in the superior recess of the fossa. Unfortunately the location of these fragments is closely associated with the blood supply at the entry of the superior tonsillar arteries and veins and their removal causes varying degrees of hemorrhage at the very beginning of dissection. In a tonsil fossa that has not been too badly diseased, this is only of a minor nature and is easily controlled by sponge pressure. In a fossa that has been subjected to peritonsillar disease of varying degrees, the removal of these fragments will almost always damage the vessels at the superior pole. This may necessitate a tie.

It is to be emphasized that the mass can only be identified by a clean opening of the fascial sheath at the superior pole. Special care must be taken in preserving the fold of tissue at the apex, known as the plica semilunaris. Using downward traction, careful examination will reveal a lobulated and loosely held mass that may be pushed away. Here will be observed the capsule of the tonsil proper. At this moment this mass of tissue should be picked up with a forceps and identified as extracapsular lymphatic tissue. It will be noted that it slides or moves about to some degree. In some cases a slight pull will cause a dimpling of the semilunaris, showing its intimate relationship to the under side of that structure.

Fortunately, allowing this extracapsular lymphoid tissue to remain will not always cause trouble. However, throats examined some months or years after a clean enucleation may exhibit, to the consternation of the physician who performed the tonsillectomy, an angry piece of lymphoid tissue reposing at the center of the upper fossa. This may be in conjunction with a general infection of the tonsillar tissue remaining elsewhere in the throat and may resolve with the usual treatment of the complete throat. It has been the duty of many to open an acute infection firmly sealed off in the supratonsillar space, an infection which should be called a peritonsillar infection or abscess although a tonsillectomy has been performed.

The treatment and removal of both the lingual and supratonsillar masses require care and caution. In dealing with the lingual mass, one must remember that its close proximity to the tongue constitutes a danger. In most cases the blood supply to the posterior third of the tongue lies deep and aberrant vessels may be present. Most important is the proximity of the

lingual nerve which lies in a horizontal or parallel plane at the edge of the tongue and supplies the important sensory fibers of taste. The position of the nerve exposes it to injury. Loss of taste sensation may occur in the event the nerve filament is accidentally cut or severed which is indeed a calamity and a bad result in the removal of the lingual tonsil.

Nerve injury may occur despite care in any technic used. The most satisfactory method is the removal of the lingual mass at the time of the original tonsillectomy. It is important that blunt, clean dissection of the lower pole of the tonsil proper be done. The elevation of the tonsil should be away from the fossa with the careful placement of the snare wire so as to include the lingual tonsil and not a portion of the tongue. The slow, firm closure of the snare, with elevation of the freely dissected faucial tonsil, brings up that portion of the lingual tonsil safely removed. It is at this critical moment that it is essential to have good visualization and proper tension, without unwarranted jerking. This spells the difference between clean removal of the lingual tonsil and possible injury to the tongue and its nerve supply.

At this point one must be cautioned in the placement of the snare wire of the instrument at a 45-degree angle so that injury of the tongue may not occur. If, on close inspection of the lower fossa, about ½ inch of what looks like number 60 thread flipping back and forth should be seen, the final closure of the snare was too close to the tongue and what looks like a thread is likely to be a lateral branch of the lingual nerve. This results in the loss of taste and presents an unpleasant problem in aftercare. If separation of the main tonsil mass does occur, it is preferable to pick up that portion of the lingual tonsil which can be recovered with a grasping forceps. Here it is advisable to use a snare rather than scissors to lessen the danger of a cutting edge so close to the tongue.

In close relationship to the lingual tonsil and the faucial tonsil is a mass in an elongated layer in the portion of the plica triangularis. These small masses are almost microscopic in some cases and in others large enough to be counted, with small crypts frequently to be seen. If allowed to remain, in many instances the plica folds inward and plants these seeds on the anterior pillar where they may become a regrowth of tonsil tissue. On careful opening of the plica, these masses will fall outward, and may be removed along with the lingual tonsil at the completion of the operation by inclusion in the loop of the snare.

In dealing with the supratonsillar masses, of first importance is the careful, clean opening of the invaginated fold of mucous membrane forming the hood which lies at the apex and junction of the glossopharyngeus and palatopharyngeus muscles. The apex is blunted by this invagination and blends into the capsule sheath and in this location the first mass of tissue may be found. The removal of these masses or fragments is best done at this moment, before continuing dissection of the capsule at the superior pole. Further work allows this mass to retract into the superior fossa where it is undistinguishable in its native area. A single forceps may often tease it loose but sometimes a second forceps may be required to grasp the mass as it will, in most instances, be lobulated and will separate with ease and may be lost. Gentle pulling and blunt dissection will recover this tissue, after which the completion of the tonsillectomy will be quite rapid if only the usual amount of hemorrhage occurs. If necessary, a hemostatic suture or tie may be placed at completion of enucleation.

CONCLUSION

Surgeons dealing with the problem of clean, satisfactory tonsillectomies must point out these factors in teaching the novice. It is to be hoped that they will take the time to clarify these important areas of anatomy so that a physician in training may become familiar with extracapsular fragments of tissue.

On casual observation one might state that the extracapsular masses are of no importance as long as the faucial tonsil is removed completely. This may be a controversial point, but it is contended here that the complete removal of these fragments and masses is as important to the final result as the complete ablation of the adenoid mass.

The purpose of a tonsillectomy is for the removal of actual or potential foci of infection. The extracapsular fragments are potential foci of infection and surgeons operating on the throat should be aware of them as important causes for dissatisfaction in routine tonsillectomies.

1560 Humboldt St.

REFERENCE

Gray, H.: Anatomy of the human body. Ed. 25 edited by C. M. Goss. Lea & Febiger, Philadelphia, 1948.

INJURIES FROM ATOMIC BOMBS—AIR BLAST EFFECTS

Air blast effects on people fall into two categories: (a) Those caused directly by the pressure wave of the blast, and (b) those caused indirectly by collapse of buildings, flying wreckage, and by people being thrown against solid objects.

Direct blast injury may occur wherever the air comes into contact with body surfaces—particularly the intestinal tract, the stomach, the lungs, the ears, and the sinuses about the nose. Greatly increased pressure, especially if the increase is sudden, can tear these tissues. Few injuries of this sort were reported in Japan among survivors.

Secondary blast injuries are an important cause of death in an atomic bomb explosion. Since practically all brick and light masonry buildings with weight-bearing walls in the blast area will be wrecked, wooden buildings flattened, and the doors and other partitions of blast-resistant steel-reinforced concrete buildings blown out, people in or near these buildings will be killed or injured by collapse of structures, and by missile effects of debris.—Report prepared for the National Security Resources Board by the Department of Defense and the United States Atomic Energy Commission.

Book Notices

THE EYE AND ITS DISEASES. Edited by Conrad Berens, M.D., F.A.C.S., Managing Director of The Ophthalmological Foundation, Inc.; President, Snyder Ophthalmic Foundation; President, American Academy of Ophthalmology and Otolaryngology; Diplomate and former Member, American Board of Plastic Surgeons; President, Pan American Association of Ophthalmology; formerly President of the Section on Ophthalmology of the American Medical Association; Fellow of the American Ophthalmological Society; Fellow of the American Illuminating Engineering Society; Fellow of the Aero-Medical Association; Vice-President, National Society for the Prevention of Blindness; Vice-President, International Society for the Prevention of Blindness. Ed. 2. Cloth. Pp. 1092, with illustrations. Price $16.00. W. B. Saunders Company, West Washington Square, Philadelphia, 1949.

This authoritative collection of contributions from international specialists in diseases of the eye shows much benefit from revision, after 13 years. Emphasis now falls on different diseases, since some of those more prevalent conditions, such as trachoma, are now under control. Eye surgery and plastic procedures have developed considerably between the two editions. Chapters are now included on illumination, physiologic chemistry, and gonioscopy. Many illustrations are new, and all bibliographies contain the most recent references in each field. Each author has revised his contribution.

There can be little doubt of the value of this well-indexed reference work for the practicing ophthalmologist, the student and the teacher in ophthalmology, and for physicians who must consult a sound source—the general practitioner, the pediatrician, the neurologist, and the rhinologist.

FUNDAMENTALS OF OTOLARYNGOLOGY. By Lawrence R. Boies, M.D., Clinical Professor of Otolaryngology, Director of Division of Otolaryngology, University of Minnesota Medical School. Cloth. Pp. 444, with illustrations. Price $6.50. W. B. Saunders Company, West Washington Square, Philadelphia, 1949.

This volume is an excellent basic text in the fundamentals of otolaryngology for the undergraduate medical student, and may also be useful to the physician who is not a specialist. It is not intended as a complete reference textbook. Historical data have been omitted. References cover literature of only recent years except for outstanding contributions. The book wastes no time on extended introductory matter or unnecessary verbiage; and its simple, easy-to-read style, assisted by a short line length, frequent paragraphs, good organization, and illustrations, make this volume in many ways a model of a beginning text.

MAY'S MANUAL OF THE DISEASES OF THE EYE. Edited by Charles A. Perera, M.D., Assistant Clinical Professor, College of Physicians and Surgeons, Columbia University, New York; Associate Attending Ophthalmologist, Presbyterian Hospital, New York. Ed. 20, revised. Cloth. Pp. 512, with illustrations. Price $5.00. The Williams & Wilkins Company, Mt. Royal & Guilford Aves., Baltimore, 1949.

Older generations of general practitioners will be pleased to recognize this old friend, well developed through extensive and progressive revisions. The little manual now in its twentieth edition has been very popular and widely distributed, enjoying many foreign editions and printings. It is still small and handy, designed to present to the new generation of students and doctors the fundamental facts of ophthalmology to be used in general practice. Uncommon conditions and those of interest to only the specialist have been mentioned and handled briefly, so that they can be found upon reference to the more extensive textbooks.

One of the fine features of the book is the reproduction of Dr. May's original colored plates, showing common external diseases of the eye and changes in the fundus, some of the pictures indicative of general diseases and conditions of the nervous system, some illustrative of alterations upon which ophthalmic diagnosis depends. Some of the other illustrations have been exchanged for newer more informative cuts, and especially those of instruments have been replaced. Among the tables are visual standards for operating motor vehicles and the ocular requirements for entrance into the Army, Navy, Marine, Coast Guard and Air Services of the United States.

The chapters concerning external examination of the eye and its adnexa, subjective or functional examinations of the eye, and objective examination of the eye conducted in the dark room with oblique illumination, the ophthalmoscope, transillumination and the corneal microscope with slit-lamp are particularly to be recommended.

CLINICAL AUDIOLOGY. By Maurice Saltzman, M.D., Assistant Professor of Otorhinology, Temple University School of Medicine; Associate Otolaryngologist, Mount Sinai Hospital, Philadelphia; Diplomate, American Board of Otolaryngology. Cloth. Pp. 196, with illustrations. Price $5.00. Grune & Stratton, Inc., 381 Fourth Avenue, New York 16, 1949.

What purports to be the first of its kind can afford to be less well done than is this book. It is a nice amalgam of knowledge on the ear, on hearing, on the physics of sound, on neurophysiology and psychophysiology in relation to the patient as a whole.

Research to date has been reviewed and carefully retested by Saltzman, who has contributed much of value himself. Thus the volume has the worth not only of a splendid textbook but also of an authentic piece of research. The recommendations on the choice of a hearing aid are useful and impartial.

AN ATLAS OF AMPUTATIONS. By Donald B. Slocum, M.D., M.S., Orthopaedic Surgeon, Sacred Heart General Hospital, Eugene, Oregon; Member of American Academy of Orthopaedic Surgeons; Member of the American Society for Surgery of the Hand; Branch Consultant in Orthopaedic Surgery, U. S. Veterans Administration; Formerly Chief of the Amputation Section, Walter Reed General Hospital, Washington, D. C. Cloth. Pp. 562, with illustrations. Price $20.00. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1949.

Developing from primitive times when it was the first depicted surgery through more extensive use in medieval times brought about by the invention of gun powder and through the first World War, when again the need was augmented and the surgical approach improved, amputation now can be defined as a "phase of reconstruction employing plastic and orthopedic surgery in delicate balance."

This book is not an encyclopedia of amputation procedures, but it covers very well the factors of practical significance in the creation of a comfortable, functioning stump to which a serviceable prosthesis can be fitted, in the principles of educating the patient to use the amputated limb, and in promoting a sound psychological adjustment. This ultimate goal is the theme of the volume.

Particular credit should be granted the author for his continuous painstaking definition of terms and procedures and his constant explanation of advantages and disadvantages. Demonstration technics are excellent. He drew heavily from the fine source of the U. S. Army Medical Museum for illustrations. The book is well indexed, and altogether well written and well edited.

SUPPLEMENT TO THE BOOK OF THE STATES, July, 1949. Paper. Pp. 154. Price $2.00. The Council of State Governments, 1313 E. 60th Street, Chicago 37, 1949.

The latest word, as of May, 1949, on state activities, administration, legislatures, services, problems, and progress appears in this supplement. It is a convenient directory of the officials who administer these phases of government. Compiled with the cooperation of the various legislative reference agencies by the reputable Council of State Governments, this source may be considered authoritative.

STERN'S APPLIED DIETETICS. The Planning and Teaching of Normal and Therapeutic Diets. Revised by Helen Rosenthal, B.S., Chief of Frances Stern Food Clinic, The Boston Dispensary, Assistant in Medicine, Tufts College Medical School; Pearl C. Baker, B.S., Former Associate, Frances Stern Food Clinic, The Boston Dispensary; Wilma A. McVey, M.D., Assistant in Medicine, Tufts College Medical School. Ed. 3. Cloth. Pp. 294, with illustrations. Price $5.00. Williams & Wilkins Co., Mt. Royal and Guilford Aves., Baltimore, 1949.

The value of this book to the physician, the social worker, the student in home economics and applied dietetics, the teacher and public health worker, and the nurse is evident upon even cursory scrutiny. Especially useful are the dietary outlines designed for the therapeutic diet for such conditions as allergy, atonic and spastic constipation, colitis, peptic ulcer, gastritis, underweight, obesity, diabetes, liver disease, gallbladder disease, nephritis, pregnancy, cardiovascular disease, and so forth.

Constructed to supply normal dietary needs with consideration for the pathological condition of the patient, each outline contains information about the body part affected, the physiology, pathological physiology, dietetic treatment, contributing factors in dietetic treatment, food for the day, the reason for the selection of foods used in the special diet, environmental factors that influence the effectiveness of the diet, education of the patient, and abnormal conditions and diseases that may be found in association with the particular disease described.

The emphasis here lies on teaching people within a community the proper use of food. It is not a revolutionary book but one which can be distinctly useful in helping the public health worker to establish understanding with the layman concerning his own normal and therapeutic food requirements.

ATLAS OF SURGICAL OPERATIONS. By Elliott C. Cutler, Late Moseley Professor of Surgery, Harvard University, and Chief Surgeon, Peter Bent Brigham Hospital; formerly, Brigadier General, U.S. Army Medical Corps, Chief Consultant in Surgery, European Theater of Operations; formerly, Professor of Surgery, Western Reserve University, and Director of Surgery, Lakeside Hospital, and Robert M. Zollinger, Professor and Chairman of the Department of Surgery, Ohio State University College of Medicine, and Chief of the Surgical Service, University Hospitals, Ohio State University; formerly, Assistant Professor of Surgery, Harvard University, and Surgeon at the Peter Bent Brigham Hospital; formerly, Colonel, U.S. Army Medical Corps, Senior Consultant in Surgery, European Theater of Operations. Ed. 2. Cloth. Pp. 226, with illustrations. Price $9.00. The Macmillan Company, 60 Fifth Avenue, New York, 1949.

To the operations treated in the first edition there have been added the procedures for vagotomy (although the final work on its acceptance has not yet been completed), excision of pilonidal sinus, cystotomy, hydrocele repair, subtemporal decompression, choledochoduodenostomy, and the removal of subdural hematoma.

Some revisions were suggested by residents, interns, and students, namely, greater detail in both descriptions and illustrations. The Atlas deliberately has been limited to common operations. In producing a second edition, the authors resisted the temptation to expand beyond these self-imposed limits. The goal of the Atlas is the teaching of a craft. Miss Mildred Codding's fine drawings constitute a major share of the exposition.

Simple directions, as young surgeons know, are not so easily come by. This volume goes a long way toward providing a clear presentation of the surgical procedures most likely to be performed by the young doctor.

AN ATLAS OF THE BLOOD AND BONE MARROW. By R. Philip Custer, M.D., Director, Laboratories of the Presbyterian Hospital in Philadelphia; Assistant Professor of Pathology, The University of Pennsylvania School of Medicine; Consultant to the Armed Forces Institute of Pathology. Cloth. Pp. 321, with illustrations. Price $15.00. W. B. Saunders Company, West Washington Square, Philadelphia, 1949.

Hematology, while an honest specialty in itself, cannot be divested from the consideration of the general practitioner or the specialist. Blood dyscrasias through their various manifestations should be recognized. Furthermore, the reactions of the hemolytopoietic organs when diseases are present in the body are pertinent to accurate diagnosis. The usefulness of this "Atlas" to clinicians, hematologists, pathologists, and medical technologists is unquestionable.

The illustrations are conspicuously good. The author included 42 color photomicrographs among his 285 illustrations of highly magnified large microfields. In addition to the usual smears, he presents sections of tissue with an equal emphasis on the use of smears and tissue sections in diagnosis. The effort to conform with the terminology recommended by a committee sponsored by the American Society of Clinical Pathologists and the American Medical Association is admirable. (This committee report on nomenclature is reprinted in the "Atlas.") It is unfortunate that the captions for the excellent illustrations do not carry out this consistency in nomenclature. However, this is no serious criticism. The legends are good, often carrying clinical notes and a brief description of treatment.

Technic for aspiration of bone marrow and trephining and a discussion of their relative merits are well presented. A few illustrations demonstrate the results of poor technic and of artifacts.

APPLIED ANATOMY AND KINESIOLOGY. By Wilbur Pardon Bowen, M.S., Late Professor of Physical Education, Michigan State Normal College, Ypsilanti, Michigan. Ed. 6, revised. Cloth. Pp. 390, with illustrations. Price $4.75. Lea & Febiger, Washington Square, Philadelphia, 1949.

Here is a revision of a classic text in physical education. The original purpose of promoting the understanding of muscular movement has been the criterion for revision as it was the basis for the original edition. The book holds interest not only for directors of physical education, team trainers, sportsmen with an analytical approach to their hobby or profession, and students, but the osteopathic physician will be interested in this comprehensive presentation of kinesiological function. At the scientific level the subject is treated rather intensively.

Games, sports, and such everyday activities as walking, running, climbing and descending stairs, stooping and lifting, carrying, sitting, and occupational activities like shoveling, pushing, sawing, plastering, planing, chopping, hoeing, and turning a crank are analyzed, and body mechanics is explained in such a way as to promote efficiency if the principles are observed. These principles may be utilized to assist a patient to break a bad habit by substituting for it a new sound procedure.

The chapter on muscle chemistry is a new addition. With the mechanical principles of action and the anatomical and physiological functions of muscles applied to purposeful action explained, the second, third and fourth parts of the book go into details of movements of the shoulder girdle, the shoulder joint, the elbow and forearm and hand, the hip joint, the knee joint, the foot, the spinal column, and breathing. The next section is devoted to the integration and classification of muscle action. Returning to general kinesiology, Bowen discusses the erect posture before applying principles to activity.

MALARIA. The Biography of a Killer. By Leon J. Warshaw, M.D. Cloth. Pp. 348. Price $3.75. Rinehart & Company, 232 Madison Avenue, New York 16, 1949.

The multicentury career of the killer malaria has been presented here for both intelligent layman and well-read doctor. It is honest and interesting reading. The one biography encompasses brief biographies of many men contributing to the accumulation of knowledge about the disease and its relation to the prevention of progress of the world's civilization, Alphonse Laveran, Robert Talbor, Patrick Manson, Ronald Ross, Albert King, Clements R. Markham, Justice Charles Hasskarl, to name a few. So many aspects of the campaign against malaria are good adventure tales—the work to learn the cause of the fever and the source of the infection, the discoveries in the blood stream, the building of the big canals, the Brazilian epidemic, the use of quinine, nets, and repellents, DDT, atabrine, and the quest for the ideal drug.

Warshaw points out that the obstacles to the solution of the problem of malaria control are not ignorance of the

physical or biological facts but rather social ignorance and/or apathy to their proper application to eradicate the disease. Throughout the book one encounters evidence of the tragic results of poor public relations. To read the book and to recommend it to intelligent and socially responsible patients would improve the situation.

A MANUAL OF PHYSICAL THERAPY. By Richard Kovacs, M.D., Professor of Physical Medicine, New York Polyclinic Medical School and Hospital; Attending Physical Therapist, Manhattan State, Harlem Valley State and Columbus Hospitals; Visiting Physical Therapist, New York City Department of Correction Hospitals; Consulting Physical Therapist, Mary Immaculate Hospital, Jamaica, New York, St. Charles Hospital, Jefferson, L. I., Alexian Brothers Hospital, Elizabeth, N. J.; Area Consultant, Veterans Administration; Consultant, Physical Medicine, Surgeon General, Department of Army. Ed. 4, revised. Cloth. Pp. 328, with illustrations. Price $3.75. Lea & Febiger, Washington Square, Philadelphia, 1949.

Except for the sections on *applied* physical therapy, much of the material Dr. Kovacs included in "Electrotherapy and Light Therapy" is used in this concise presentation. The manual deserves wide usage in elementary training courses, and as a source of information for personnel in rehabilitation work the reader will find useful the chapters on institutional therapy, the relation of the department to the other departments in the hospital, its personnel, equipment and arrangement, the records, et cetera. as well as the sections on heat and light which describe the physics and physiological effects of heat, distinguishing and discussing also radiant heat, the considerations surrounding artificial fever, heliotherapy and artificial light therapy. The section on electricity is divided into well-presented chapters on electrophysics, general electrotherapy, galvanic current, low-frequency currents, electrodiagnosis, high-frequency currents and medical diathermy. Hydrothermal and hydrokinetic measures are described, and massage and exercise, the latter being a collaboration between the author and Dr. Madge C. L. McGuinness.

The subject is admittedly a difficult one to handle, since the success of such a manual as this depends upon maintaining a balance between the values of theoretic instruction and practical experience. Dr. Kovacs has been successful here. Incidentally, the illustrations are often duplicates of those in the more comprehensive text "Electrotherapy and Light Therapy." They have been well chosen and have much teaching value.

HELPFUL HINTS TO THE DIABETIC. By William S. Collens, B.S., M.D., Chief of the Diabetic Clinic; Chief of the Clinic for Peripheral Vascular Diseases; Associate Attending Physician, Maimonides Hospital; Attending Physician, Metabolic Diseases, Jewish Sanitarium and Hospital for Chronic Diseases, Brooklyn, New York; Consultant in Metabolic Diseases, Rockaway Beach Hospital, New York City, and Louis C. Boas, A.B., M.D., Chief of the Diabetic Clinic, Associate Visiting Physician, Greenpoint Hospital; Associate Physician, Metabolic Diseases, Jewish Sanitarium and Hospital for Chronic Diseases; Adjunct in Medicine, Beth El Hospital; Assistant Physician, Maimonides Hospital, Brooklyn, New York. Cloth. Pp. 136, with illustrations. Price $3.00. Charles C Thomas, Publisher, 301 E. Lawrence Avenue, Springfield, 1949.

The authors of this slim little book based its contents on the questions they often are called upon to answer by their diabetic patients. It contains an explanation of the nature of the disease, suggestions for diet, technic of insulin injection, the laboratory procedures for urinalysis, and some of the complications that might result from diabetes. There are diet tables with the percentage values and gram measures of carbohydrate, protein, and fat per 100 gram portion, which the patient can consult until he has these values memorized and can handle his diet without conscious computation. The vitamin charts are adopted from standard sources. The need of diabetic patients for vitamin B is explained. A set of charts illustrating time schedules for feedings and insulin injection is included, giving clear and easily understood regimes for unmodified insulin and protamine zinc insulin in the usual combinations and doses. The last chapter contains questions commonly asked and their answers—a good summarizing device. The whole picture is developed in the book but the reader who does not realize his questions *have* been answered finds them concisely stated and satisfactorily answered in this final chapter. A glossary has been composed to assist the lay reader to read with comprehension.

Successful management of the condition depends much on the intelligent application of the physician's instructions by the patient. Here is a book to supplement a physician's explanations and instructions and to satisfy the patient who needs reassurance and information. If the patient heeds only the warning against quacks and nostrums stated in plain language, the book will prove worthwhile to both patient and physician.

THE DIAGNOSIS OF PANCREATIC DISEASE. By Louis Bauman, M.D., Formerly Assistant Professor of Clinical Medicine, Columbia University, and Assistant Visiting Physician to the Presbyterian Hospital, New York. Cloth. Pp. 74, with illustrations. Price $5.00. J. B. Lippincott Company, 227 S. Sixth St., Philadelphia, 1949.

This monograph discusses the pancreatic function tests and their application in the diagnosis of pancreatic disease, and correlates the author's laboratory and clinical experience in pancreatic disease at the Presbyterian Hospital, New York, during the past 10 years. Although the pancreas is the principal organ that is concerned with the digestion of starch, protein, and fat, an appraisal of its functional capacity was impractical until a few years ago. Recent progress in the surgery of the pancreas and the introduction of new laboratory methods have advanced knowledge of this organ in health and disease. These advances have emphasized the importance of accurate diagnosis and valid diagnostic tests. Fasting and blood-sugar determinations with levels below 50 mg. per cent have proved to be the most important laboratory tests in islet-cell tumors. Similarly, elevated serum amylase findings have been of the greatest help in the diagnosis of acute pancreatitis.

DIAGNOSIS AND TREATMENT OF BRAIN TUMORS AND CARE OF THE NEUROSURGICAL PATIENT. By Ernest Sachs, A.B., M.D., Research Associate in Physiology, Yale University, New Haven; Formerly Professor of Clinical Neurological Surgery, Washington University School of Medicine, St. Louis. Ed. 2. Cloth. Pp. 552, with illustrations. Price $15.00. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1949.

Here is a second edition which combines two books printed at widely differing times, "Diagnosis and Treatment of Brain Tumors" in 1931, and "Care of the Neurosurgical Patient" in 1945. In spite of Sachs' valid contention that these two subjects properly belong together, one must doubt the wisdom in combining these volumes so casually.

In many respects, this book seems to be no more than a reprint of the two former first editions. Without the older volumes at hand, this reviewer cannot verify the impression that the chapters have been lifted intact, their order changed slightly, the pages renumbered, and the whole read somewhat hastily with scant attention paid to such details as references to "progress in the last twenty years." The reader is thereby sent into weird excursions in time. Twenty years before 1931, before 1945, before 1949? To verify this cursory impression is the fact that the bibliography contains but a dozen references to work conducted since the 1945 edition came off the press, and a preponderance of the references revert to the works of the earliest of the neurologists. With no intent to belittle their accomplishments, one wonders if it is indeed true that there has been so little progress in surgery, especially in neurosurgery?

Sachs' book and his work and reputation belie this possibility. His discussions of cranial cases with operative procedures, operative technic, and neurosurgical methods are excellent. His chapter on methods of examination bears scrutiny and adoption at least in part by neurosurgeons. The anatomy of the brain is related topographically to the head, face, and scalp, which is one of Sachs' own contributions to diagnosis and surgery. A thorough knowledge of the finer physiological and anatomical details is presupposed or must be found in textbooks. Only the surgically applicable facts of physiology and anatomy are mentioned.

In his preface to the second edition Sachs states that he has brought into contemporary perspective the significance

of pituitary diseases, the role of the hypothalamus, and "two methods of diagnosis developed in recent years, angiography and electroencephalography," which, in text, he acknowledges exist but dismisses summarily, preferring the older method, ventriculography, for localizing tumors as part of the diagnosis.

OPERATING ROOM TECHNIQUE. By Edythe Louise Alexander, R.N., Supervisor of the Operating Rooms of the Roosevelt Hospital, New York City. Formerly Supervisor of Operating Rooms, Mountainside Hospital, Montclair, New Jersey; Supervisor of Private Pavilion Operating Rooms, New York Hospital, New York City. Ed. 2. Cloth. Pp. 766, with illustrations. Price $10.00. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1949.

Revisions and expansions of this book written for the operating room nurse, the supervisor for teaching purposes, and student and suture nurses, whose duties contribute to the efficiency of operating procedure, have improved a good textbook. Miss Alexander has written a direct didactic description of good technic. For each operation considered, she defines the aim of the surgery, describes tthe basic anatomy involved, lists the instruments, needles, sutures, sterile supplies, indicates the anesthesia usually used, the position of the patient, the method of preparation and the draping, and step-by-step she outlines the procedure with the instruments and equipment needed for each. Photographs of the instruments with careful identification and basic pictures of the surgery are included.

There are good chapters devoted to the general arrangement of an operating room for general surgery, care and cleaning of the operating rooms, the nursing personnel, history of sepsis, sterilization, wound healing treatment, and preparation of the operative area, care and sterilization of equipment, suture materials, anesthesia, and standardization of duties and precautions.

There is an unfortunate, conspicuous lack of careful proofreading throughout, especially in the captions for the figures, which is lamentable in a textbook.

ELECTROCARDIOGRAPHIC TECHNIQUE. By Kurt Schnitzer, R.T., M.D. Cloth. Pp. 96, with illustrations. Price $3.50. Grune & Stratton, Inc., 381 Fourth Ave., New York City, 1949.

The science of electrocardiography has advanced so much during the last years that it has become a necessary instrument to the physician in everyday practice. Most physicians do the interpretation only and leave the taking of the record to the nurse, the laboratory or x-ray technician, or other office help. This book gives an account of the electrocardiographic technics described in the outstanding textbooks, periodic journals, and in the recommendations of manufacturers of cardiographic equipment. As the book is intended particularly for the technician not trained in the field of electrocardiography, the language has been kept as simple as possible and explanatory diagrams and photographs are included. The book is well designed for the practical purpose of helping the inexperienced technician in applying and improving his technic.

NORMAL VALUES IN CLINICAL MEDICINE. By F. William Sunderman, M.D., Ph.D., Professor of Experimental Medicine and Clinical Pathology, University of Texas Postgraduate School of Medicine; Chief of The Department of Clinical Pathology and Director of Clinical Research, M. D. Anderson Hospital for Cancer Research, Houston, Texas, and Frederick Boerner, V.M.D., Late Associate Professor of Clinical Bacteriology, Graduate School of Medicine, University of Pennsylvania, and Assistant Professor of Bacteriology, The School of Medicine, University of Pennsylvania; Bacteriologist, The Graduate Hospital of Philadelphia; Advanced Bacteriologist, Pennsylvania Department of Health. Cloth. Pp. 845, with illustrations. Price $14.00. W. B. Saunders Company, West Washington Square, Philadelphia, 1949.

Lord Kelvin is attributed with the quotation, "When you can measure what you are speaking about and express it in numbers, you know something about it; when you cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind." The numbers in "Normal Values" have been selected to serve as a standard.

This pioneering effort in an unexploited field, namely, the comprehensive compilation into a single volume of values that may be considered normal in clinical medicine at large, deserves a good deal of credit in meeting the need of students and lay workers. Physicians are urged to evaluate and interpret tabulations and figures according to their own experience.

Normal records for the organic systems are presented in figures and statistical tables and discussed with both brevity and clarity. The reader is certain to find useful and convenient the chapters on statistical methods and the really excellent food-value tables.

SKIN GRAFTING. By James Barrett Brown, M.D., Professor of Clinical Surgery, Washington University School of Medicine; Chief of Plastic Surgery, Veterans Administration; Former Senior Consultant in Plastic Surgery, U. S. Army; and Chief of Plastic Surgery, Valley Forge General Hospital, and Frank McDowell, M.D., Assistant Professor of Clinical Surgery, Washington University School of Medicine, St. Louis, Missouri. Ed. 2. Cloth. Pp. 340, with illustrations. Price $7.50. J. B. Lippincott Company, 227 S. Sixth Street, Philadelphia, 1949.

An authoritative quality stemming from first-hand experience pervades this book. The first edition was devoted to the repair of burned tissue. This volume includes also the repair of traumatic lesions and lesions resulting from the treatment of tumors and from excessive radiation.

The authors point out that "The final criterion of the result is the extent to which the patient is able to resume his normal station in life and carry out his usual activities without embarrassment in regard to his appearance or limitation in his motions." Diagnosis of the tissue lost or displaced and the function to be restored is discussed. The value of human biopsies is emphasized. Understanding of the principles of healing is sought constantly. Directions for making skin grafts are explicit and concise. The first edition of the book was used by nonspecialists in emergency situations, who wrote the authors of their success.

Although the authors decry the overenthusiastic publicity about plastic surgery, leading the patient to expect the impossible in no time at all, their own substitutions of original skin tissue, amply illustrated by the fine photography of Miss Gertrude Hance, tend to belie this modest attitude. However, it would behoove any doctor who encounters accident victims with skin mutilation to become well acquainted with the limitations and possibilities of skin grafting in order to advise and secure the best results for his patients.

HUMAN PATHOLOGY. By Howard T. Karsner, M.D., LL.D., Former Professor of Pathology, Western Reserve University; Medical Research Advisor to the Bureau of Medicine and Surgery, United States Navy. Ed. 7. Cloth. Pp. 928, with illustrations. Price $12.00. J. B. Lippincott Company, 227 South Sixth Street, Philadelphia, 1949.

The travail of revision of this seventh edition of the well-known text has been decidedly rewarding. The new chapters on diseases of the eye (written by Orbison and Keyes) and of the skin (by Lund with the advice of Johnson round out the coverage. New illustrations are used, and many of the drawings have been replaced by photographs and photomicrographs, with the refreshing ackowledgment that in pathology a picture is not the equivalent of a thousand words.

Karsner states that the revisions have included not only the multitudinous additions necessary to bring the subject matter up to date but also simplification of phraseology and constant clarification of description. The original edition was designed for the student and the general practitioner to demonstrate the functional significance of morphological alterations in man as they are produced by disease. A tabular form of introduction to each chapter has been supported by functional typography which outlines each subject as it is discussed. References suffice to introduce the student to the literature rather than to present a comprehensive listing of original work in each field.

These pedagogic features commend the use of "Human Pathology" to the general practitioner for quick and easy reference and to the student for a comprehensive background.

Conventions and Meetings

Announcements

American Osteopathic Association, Fifty-Fourth Annual Meeting, Chicago, July 10-14, inclusive. Program Chairman, C. R. Nelson, Ottawa, Ill.

Academy of Applied Osteopathy, Chicago, July 14, 15.

American College of Osteopathic Internists, Continental Hotel, Kansas City, Mo., October 23-26. Program Chairman, Stuart Harkness, Des Moines, Iowa.

American College of Osteopathic Surgeons, Hotel Savery, Des Moines, Iowa, October 15-19. Program Chairman, Howard A. Graney, Des Moines, Iowa.

American Osteopathic Academy of Orthopedics, Hotel Savery, Des Moines, Iowa, October 15-19. Program Chairman, Harry F. Shaffer, Detroit.

American Osteopathic College of Radiology, Hotel Savery, Des Moines, Iowa, October 15-19; Board of Governors, October 11. Program Chairman, D. W. Hendrickson, Wichita, Kans.

American Osteopathic Hospital Association, Hotel Savery, Des Moines, Iowa, October 15-19. Program Chairman, Mr. Edward C. Barron, Detroit.

American Society of Osteopathic Anesthesiologists, Hotel Savery, Des Moines, Iowa, October 15-19. Program Chairman, Crawford M. Esterline, Kirksville, Mo.

Arizona, Westward Ho, Phoenix, May 12-14. Program Chairman, Geoffrey T. Lawrence, Tolleson.

Arkansas, Albert Pike Hotel, Little Rock, May 5, 6. Program Chairman, L. J. Bell, Helena.

California, Sacramento, annual convention, May 3-5. Program Chairman, Richard E. Eby, Pomona. Board, April 30, House of Delegates, May 1, 2.

Georgia, Hotel Thomas, Thomasville, May 12, 13.

Hawaii, April 27-29. Program Chairmen, Josephine E. Morlock and Elizabeth R. Gladding, Honolulu.

Illinois, Knickerbocker Hotel, Chicago, May 12-14.

Indiana, Claypool Hotel, Indianapolis, May 7-9. Program Co-Chairmen, H. D. Wolf and John Kenney, both of Indianapolis.

Iowa, Hotel Fort Des Moines, Des Moines, May 15, 16; joint meeting of House of Delegates and Board of Trustees, May 14. Program Chairman, H. D. Meyer, Algona.

Kansas, House of Delegates, Gleason Hospital, Larned, April 29, 30; annual convention, Allis Hotel, Wichita, October 1-4. Program Chairman, Irwin J. Conant, Meriden.

Kentucky, Brown Hotel, Louisville, October 11, 12. Program Chairman, Martha Garnett, Louisville.

Maine, postgraduate seminar, Hotel Elmwood, Waterville, April 14, 15. Program Chairman, Edward G. Drew, Waterville. Annual meeting, Samoset Hotel, Rockland, June. Program Chairman, Marshall J. Gerrie, Pittsfield. Semi-annual meeting, Bangor, December.

Michigan, refresher course, Hotel Statler, Detroit, April 14, 15; House of Delegates, April 16; annual meeting, Civic Auditorium, Grand Rapids, October 2-5; House of Delegates, October 1, 2. Program Chairman, Ralph F. Kraker, Ann Arbor.

Missouri, St. Louis, October 12-14. Program Chairman, Theodore Corcoranges, Raytown.

Montana, Northern Hotel, Billings, June 5-7. Program Chairman, T. G. Gunderson, Billings.

New Mexico, El Rancho Hotel, Gallup, September 14-16. Program Chairman, William D. Andrews, Albuquerque.

New York, Hotel Statler, New York City, October 13, 14. Program Chairman, Charles K. Smith, Elmira.

North Carolina, Winston-Salem, May 27.

North Dakota, Rudolph Hotel, Valley City, May. Program Chairman, Harry Homewood, Valley City.

Northwest Osteopathic Conference (Washington and Oregon Osteopathic Associations), Winthrop Hotel, Tacoma, June 4-7. Program Chairman, E. D. Mosier, Puyallup, Wash.

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Ohio, Neil House, Columbus, April 30-May 3. Program Chairman, W. D. Henceroth, Grove City.

Oklahoma, Biltmore Hotel, Oklahoma City, November 7-9. Program Chairman, Daniel B. Heffelfinger, Oklahoma City.

Ontario, Barrie, May 5, 6. Program Chairman, J. E. Wilson, Barrie.

Oregon: See Northwest Osteopathic Convention.

Osteopathic College of Ophthalmology and Otorhinolaryngology. Ambassador Hotel, Los Angeles, October 30-November 3. Program Chairman, Edward W. Davidson, Los Angeles.

Osteopathic Cranial Association, Chicago, July 15, 16.

Pennsylvania, postgraduate course, Penn-Harris Hotel, Harrisburg, April 23-28. Program Chairman, Roy E. Hughes, Indiana; annual meeting, Bellevue-Stratford Hotel, Philadelphia, September 22-24. Program Chairman, Charles M. Worrell, Palmyra.

South Carolina, Wade Hampton Hotel, Columbia, May.

South Dakota, State Game Lodge, Custer, June 4-6. Program Chairman, M. C. Thompson, Watertown.

Tennessee, Andrew Jackson Hotel, Nashville, October. Program Chairman, Richard Alexander, Greenback.

Texas, Hotel Texas, Fort Worth, April 27-29. Program Chairman, Earle H. Mann, Amarillo.

Vermont, Rutland, October 4, 5. Program Chairman, M. C. Smith, Bennington.

Virginia, Williamsburg, June 2-3.

Washington: See Northwest Osteopathic Convention.

Western States Osteopathic Society of Proctology, Biltmore Hotel, Los Angeles, September 25-27. Program Chairman, Lee R. Borg, Los Angeles.

West Virginia, Chancellor Hotel, Parkersburg. Program Chairman, Harry Myer, Vienna.

Wisconsin, Schroeder Hotel, Milwaukee, May 4, 5.

OFFICIAL AND AFFILIATED ORGANIZATIONS

CALIFORNIA

State Society

The program for the convention in Sacramento April 30-May 5 has been announced as follows:

The educational session on osteopathic research will include "Statistical Evaluation of Case Records," Louisa Burns; "Visceral Disturbance Following Experimental Vertebral Lesions," Wilbur V. Cole, and "Osteopathic Research," Grace B. Bell. All are from Los Angeles.

Cardiology will be covered by "Differential Diagnosis of Heart Pain," Orville L. Hastings, Long Beach; "The Heart in Thyrotoxicosis," Robert K. Schiefer, San Diego, and "Diagnosis and Treatment in Acute Cardiac Emergencies," Robert L. McBurney, Ontario.

The surgery symposium is to be composed of "Surgery of the Lungs," J. Willoughby Howe, Hollywood; "Surgical Repair of Hernia," William T. Barrows, Oakland; "Indications and Technic for Gastric Resection," Howard B. Norcross, Los Angeles, and "Massive Gastrointestinal Hemorrhage," William G. Stahl, Pomona.

The session on osteopathic principles will include "Functional Foot Disorders," J. M. Hiss, Los Angeles, and "Osteopathy: The Universal Treatment," Lester R. Daniels, Sacramento.

"Practical Considerations on Certain Recent Advances in Clinical Pathology," W. Harriett Davis, Burbank, and "Laboratory Aids," C. L. Nye, Los Angeles, comprise the educational session on laboratory aids.

Discussions of eye problems include "Eye Problems from the Standpoint of the General Practitioner," Laurence Houts, Long Beach, and "Deep Acute Choroiditis," Alfons I. Wray, Los Angeles.

The education session on radiology in office practice includes "Indications for Fluoroscopy and Its Dangers," J. P. Oswald, and "Film Interpretations and Demonstration of Typical Cases in Everyday Practice," Burwell S. Keyes. Both speakers are from Los Angeles.

Addresses in the symposium on nutritional therapy are "The Specific Role of Nutrition in Health Maintenance," B. H. Ershoff, Ph.D.; "Influence of Nondietary Factors in Nutrition," Dr. Bell, and "Therapeutic Application of Nutritional Principles," Louis C. Chandler. All are from Los Angeles.

The forum on the practical aspects of sterility includes "Endocrine and Physiological Aspects of Sterility," Bryce A. Pizey, Long Beach; "Mechanical Aspects of Sterility," J. J. Christensen; "Clinical Management of Sterility Problems," C. J. Mount, III, both from Los Angeles, and a round table discussion by Dorothy J. Marsh, Los Angeles, D. Clinton Bennett, South Pasadena, and J. L. Mines, III, Long Beach.

Papers to be presented in the neurovascular surgical symposium are "Mechanical Concept in the Diagnosis and Treatment of Vascular Disease," John A. Costello and Joseph O. Costello; "Autonomic Blockade as a Diagnostic and Therapeutic Measure in Vascular Disease," W. Donald Baker and Donald T. Sheldon; "Congenital Anomalies of the Heart and Great Vessels—Rationale and Indications for Surgical Correction," Donald E. Pinder, all of Los Angeles, and "Cerebral Angiography and Carotid Ligations in the Diagnosis and Treatment of Intracranial Lesions," Karl L. Albaeck, Glendale.

Scheduled in the orthopedic section are "Traumatic Conditions in the Growing Child," Karl P. Madsen, Oakland, and "Orthopedic Conditions in the Growing Child," Walter R. Garard, Los Angeles.

The educational session on physical diagnosis includes "Physical Diagnosis of Ear, Nose and Throat," E. W. Ashland, Oakland; "Physical Diagnosis of the Spinal Column," Thomas L. Morgan, San Francisco; "Physical Diagnosis of the Chest," J. A. Pearce, Sacramento; "Significance of Unusual Reflexes," K. Grosvenor Bailey, and "Diagnosis of Rectal Disorders" and a film "Hemorrhoidectomy," George J. Towne, the latter two of Los Angeles.

Speeches to be given as part of the California Osteopathic Hospital Association round table are "Relationship of Administration and Staff in Our Hospital," William G. Stahl, Pomona; "Cooperation Between Staff Members and Between Staff and Administration in Our Combined Staff Hospitals," Vincent P. Carroll, Laguna Beach; "Factors Influencing Hospital Harmony Which Are Traceable to the Administrator's Conduct of His Staff, His Hospital Employees, and Himself," Charles R. Poitevin, Long Beach; "How Much Authority Should the Administrative Staff Exercise?", Howard B. Norcross; "Staff Doctors and Their Responsibility for Hospital Personnel Policies," Mr. H. J. Kessler, the latter two of Los Angeles, and "Staff Doctors and Observances of Hospital Rules," Mr. Davis W. Lawrence, San Gabriel.

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The session on psychosomatic medicine in general practice includes "Psychiatric Diagnosis for the General Practitioner," Don C. Littlefield, Long Beach; "Psychiatric Difficulties in Children," David H. Payne, Los Angeles, and "Speech: a Psychosomatic Function," Fleda M. Brigham, South Pasadena.

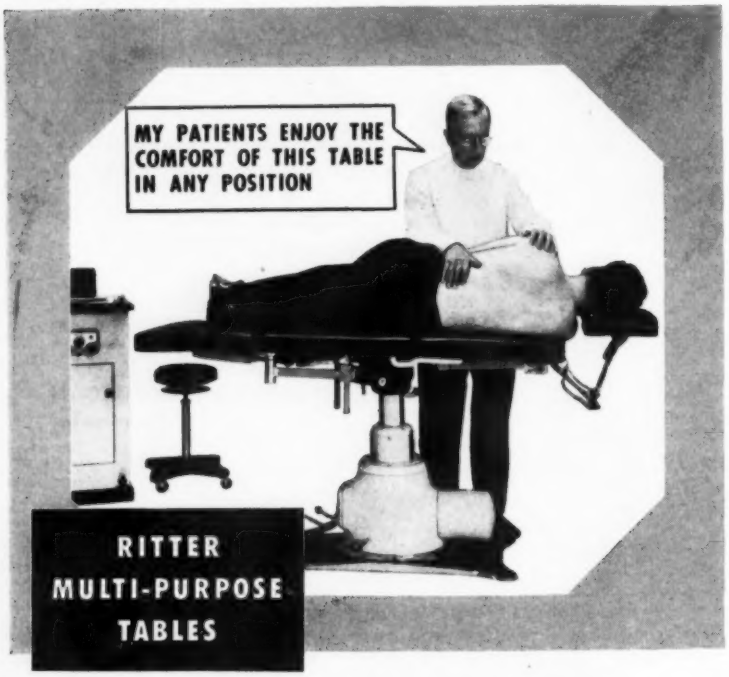
Addresses scheduled for the session on pediatric neurology are "Neurology in Pediatrics," K. Grosvenor Bailey, Los Angeles, and "Pediatric Neurology for the General Practitioner," George W. Shaw, Alhambra.

The Cancer Commission and the State Department of Public Health is scheduling "Broad Aspects of the Cancer Control Program in California," James W. Ellis, M.D.; "The Role of the General Practitioner in the Detection of Cancer," Eric A. Royston, M.D.; "The Essential Laboratory Tests in the Diagnosis of Cancer," Robert W. Huntington, Jr., M.D., and the films "What Is Cancer?" prepared by the American Cancer Society, and "Breast Cancer," by the National Cancer Research Council.

The concluding session on osteopathic principles is to include "Manipulation in Surgery," Jack Goodfellow, Oakland, and "Shoulder Technic," Robert M. Loveland, Hollywood.

Component Officers Association

At the winter meeting in Fresno February 12, W. Donald Baker, Los Angeles, was scheduled to speak on "Public Service." Reports were presented by Glen D. Cayler and Mr. Thomas Schu-



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Alameda County

Election of officers is scheduled for the meeting May 11.

Citrus Belt

A meeting was set for March 4 and 5 in Riverside, with a program sponsored by the alumni of the College of Osteopathic Physicians and Surgeons, Los Angeles.

The panel of guest speakers at the February 9 meeting consisted of pediatricians J. Philip Morris, Alex L. Lourie, Los Angeles, and Myron M. Homnick, Alhambra. Their topics were respectively, "Use of New Drugs in Office Practice," "Treatment of Allergic Diseases," and "Immunization." W. Donald Baker, Los Angeles, and Delmar J. Daniel, Burbank, spoke on public relations and its technics.

Fresno

Dr. Lee Clark of the faculty of Fresno State College was the guest speaker at a meeting January 11. His subject was filtrable viruses and antibiotics.

Hollywood Osteopathic Luncheon Club

The officers are: President, Bernice Harker; vice president, Clyde F. Gillett; secretary, Clara L. Treat (reelected), and treasurer, Walter V. Goodfellow (permanent). All are from Los Angeles.

Orange County

The January 12 meeting in Santa Ana featured a talk by Mrs. Wheatley on the availability and uses of the visiting nurse and an exposition by Edward Lee Russell, M.D., on "The New Birth and Death Certificates."

Sacramento Valley

Vincent P. Carroll, Laguna Beach, spoke on "Professional Progress on the National Level" at the meeting January 8.

William Barrows, Jack Goodfellow, J. Gordon Epperson, and Jesse P. Oswald, all of Oakland, were the scheduled speakers in a symposium on stomach and duodenal conditions and their treatment by surgery, at the meeting on February 18 at Sacramento.

San Diego

Mr. Fred H. Kraft, State senator from San Diego, reported on Sacramento activities and answered questions at the January meeting.

San Gabriel Valley

A meeting was held January 19 in San Marino.

San Jose

At the meeting on February 4, Helen Shelley, San Jose, gave a talk on "Osteopathic Diagnosis and Treatment of Certain Endocrine Dysfunctions," and Marion O. Moore, Los Gatos, reviewed discussions of cancer at a recent meeting in Oakland.

Superior California

Jesse P. Oswald, Oakland, discoursed on x-ray interpretation at the January 15 meeting in Colusa. A March meeting was scheduled.

Southside

The subject of the meeting May 4 is to be "Office Dermatology." The speaker will be announced.

COLORADO
State Society

According to the program scheduled for the meeting in Denver February 18, speakers were A. Hollis Wolf, Colorado Springs, "Cardiac Conditions"; Herbert L. Sanders, Paonia, "Diagnosis for the General Practitioner"; and Edwin F. Peters, Ph.D., Des Moines, Iowa, whose subject was unannounced.

INDIANA
First District

Members were guests of the Men's Class of the First Christian Church in Bloomington. Socialized medicine was the topic scheduled for discussion.

IOWA
State Society

J. S. Denslow and Irvin M. Korr, Kirksville, Mo., are to assist in the presentation of a 3-hour demonstration on "The Fundamental and Practical Aspects of Research Dealing with the Osteopathic Lesion, Its Characteristics, Diagnosis, and Treatment" at the state convention May 15-16 in Des Moines. Mr. Harve Lamont Smith also is scheduled to speak.

KANSAS
Arkansas Valley

The officers are: President, Glen D. Jewett, St. John; vice president, Frederick James Farmer, Stafford; secretary, Victor R. Cade, Larned.

Committee chairmen are: Membership, Dr. Farmer; ethics, J. S. Jilka, Lyons; hospitals, Ronald L. Brown; clinics, Dr. Cade; statistics, Vinson W. Gleason; convention program, Thomas B. Powell; convention arrangements, John R. Stanfield; legislation and public relations,

B. L. Gleason, all of Larned; vocational guidance, John W. Morrow; public health, Louis H. Shoraga, both of Greensburg, and industrial and institutional service, Lesly H. Opdyke, La Crosse.

A meeting was scheduled for March 30 in Larned.

At the joint meeting with the Gleason Hospital Medical Staff February 8 at Larned the speaker was Mr. D. C. Smeltzer, whose topic was laboratory procedures.

T. B. Powell, Larned, spoke on legislative affairs at the meeting January 12.

Eastern

The officers are: President, Joseph W. Stella, Topeka; vice president, Homer N. Flora, Ottawa, and secretary-treasurer, Thomas O. Osborn (re-elected), Colony.

Committee members are: Membership, E. C. Sexton, Osage City; ethics, Roy L. Brown, Topeka; hospitals, Dr. Osborn; clinics, Harry E. Eustace; statistics, A. A. Mailhiot, both of Lawrence; convention program and public health, Irwin J. Conant, Meriden; convention arrangements, D. K. Kirby, Garnett; legislation, E. Claude Smith, Topeka; vocational guidance, David L. Young, Ottawa; industrial and institutional service, C. E. Brown, and public relations, Genevra Erskine Leader, both of Topeka.

A. A. Choquette, Kansas City, Mo., addressed the meeting on urology, January 19.

Mid-Kansas

The officers are: President, Ross O. Shook, Hutchinson; vice president, Frank E. Loose, Newton, and secretary-treasurer, Ross T. Shook, Hutchinson. The trustees are Ralph W. Burditt, Moundridge, and Robert G. Waddill, Burns.

Chairman of the program committee is Alfred C. Syler, Hutchinson.

At the meeting February 8, H. H. Steffen, Wichita, addressed the society about the "Interpretation and Significance of a Schilling Blood Count."

"Peripheral Vascular Diseases, Their Diagnosis, Control, and Treatment" was the subject of a talk by Dr. Waddill at the meeting January 18.

Northeastern

A meeting was held in Holton February 8.

Sedgwick County

"Medical Management in Prison War Camps During World War II" was the subject of a talk of the Rev. Ross Vermillion at the meeting February 6.

South Central

At the February 15 meeting in Augusta, Robert Buchele, Howard, presided at a round table discussion.

Southeast

The officers are: President, David D. Harbaugh, Coffeyville; vice president, W. H. Dunlap, Girard, and secretary, Robert V. Cartwright, Chanute.

Topeka

The officers are: President, Joseph W. Stella; vice president, C. E. Brown, and secretary-treasurer, Mary Zercher, all of Topeka.

Committee chairmen are: Membership, Dr. Zercher; ethics and industrial and institutional service, E. Claude Smith; hospitals and vocational guidance, D. A. Bragg; clinics, C. E. Brown; statistics, convention program, and publicity, Genevra Erskine Leader; convention arrangements and public relations, Dr. Stella; legislation, Roy Brown, and public health, W. S. Briscoe. All are from Topeka.

Wyandotte County

The officers are: President, Angelo J. Milazzo; vice president, W. A. Warren; secretary-treasurer, Harold W. Bain (re-elected). All are from Kansas City.

Committee chairmen are: Membership, Minerva B. Brink, Kansas City; ethics, Dr. Warren; hospitals and clinics, Charles A. Schwab, Overland Park; convention program and arrangements, G. Hayden Houston; legislation, Karl M. Pearson; vocational guidance, John F. Porter, all of Kansas City; public health, Earl A. Fawks, Merriam; industrial and institutional service, Glen I. Bradbury, Bonner Springs; public relations, Dr. Milazzo, and program, Dr. Bain.

MAINE

State Society

Meetings will be held April 14, 15 in Waterville, with the seminar topic, "Obstetrics and Gynecology for the General Practitioner."

MASSACHUSETTS

Connecticut Valley

George Haswell, Northampton, demonstrated x-ray films at the meeting February 21 in Northampton.

MICHIGAN

Kent County

The officers and trustees were reported in the March JOURNAL.

Committee chairmen are: Ethics, H. A. MacNaughton; hospitals, James V.

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Porcelli; statistics, Arthur T. Taylor; legislation, Roy Bubeck, Jr.; vocational guidance, Emma L. MacAdams; public health, Howard Gault; industrial and institutional service, Charles E. McLaughlin and Eugene J. Gasick; public relations, Arthur H. Witthohn; judiciary, Maurice Lee, and internal affairs, Keith R. Sisson. All are from Grand Rapids.

Macomb County

The officers were reported in the March JOURNAL. In addition to Raymond G. Markle, Mt. Clemens, William P. MacKenzie, St. Clair Shores, also is a trustee.

The committee chairmen are: Membership and statistics, Stanley S. Conrad, Roseville; ethics and industrial and institutional service, Willis H. Yeamans, Mt. Clemens; hospitals and clinics, Thomas J. Kerns, Utica; convention program and arrangements and legislation, Campbell A. Ward; vocational guidance and public health, J. Calvin Geddes, and public relations, George Folkman, all of Mt. Clemens.

Southwestern

The officers were reported in the March JOURNAL.

The trustees are Joe F. Reed, Watervliet; Alton A. Hinks, Three Oaks, and Wilbur H. Stocker, Benton Harbor.

Wayne County

The officers and trustees were reported in the March JOURNAL.

Members of the board of directors are: H. A. Fisher, Donald J. Evans, John H. Morrison, Edmund A. Bowman, and Chester L. Boone, all of Detroit, and William F. Costello and C. B. Potter, both of Trenton.

Committee chairmen are: Parliamentarian, Philip E. Haviland, Detroit; judiciary, Dr. Evans; legislative, O. L. Brooker, Plymouth; internal affairs, Dr. Boone; professional affairs, Russell M. Wright; public health, A. P. Ulbrich, both of Highland Park; interhospital, Dr. Costello; program, Dr. Evans and J. Maurice Howlett, Detroit; public relations, Mr. Harve Lamont Smith, Highland Park; insurance and veterans' affairs, Thomas E. Jackson, Dr. Haviland, and Walter P. Bruer; building, Sydney F. Ellias; social welfare, Fred C. Laitner, all of Detroit; telephone directory, advertising, and specialists' listing, J. Clark Hovis, James G. Matthews, and Dr. Ulbrich, all of Highland Park; credit, collection, income tax, and telephone answering services, Dr. Boone, Lester E. Schaeffer, and Dr. Laitner, all of Detroit; news editor, T. J. Kosinski, Dearborn; ethics, Drs. Boone and Schaeffer; state board meeting representative, Dr. Evans, and membership, board of directors.

Western

The officers were reported in the March JOURNAL.

Committee chairmen are: Surgery, A. H. Fuller; x-ray, Walter G. Thwaites, both of Muskegon; internal medicine, Joseph G. King, and obstetrics, Roy G. Bubeck, both of Grand Rapids.

MISSOURI

Buchanan County

See Northwest District.

Central Ozark

A meeting was scheduled for April 6 in Rolla.

The surgical film, "Traumatic Injuries in General Practice," was shown and discussed at the March meeting in Waynesville.

North Central

Donald Siehl, Kirksville, lectured at the January 19 meeting in Chillicothe; his topic was "Fractures and Their Care in the Office."

Northeast

A meeting was scheduled for March 16 in Kirksville.

Kenneth Glover, Newark, presented the professional address on "Viruses" at the meeting February 9.

Northwest

The program at the January 15 meeting of this district society with the Buchanan County in St. Joseph, according to schedule, was to consist of "X-Ray Diagnosis," presented by Hervey S. Scott; "X-Ray Therapy," Ray E. Bishop, and "The Value of X-Ray to the General Practitioner," Charles L. Curry. These physicians are from Kansas City.

Southwest

M. C. Alson, D. V. M., Carthage, was the guest speaker at the meeting January 18 in Carthage. His subject covered public health and preventive medicine, particularly in regard to bovine tuberculosis and bone and joint tuberculosis in humans; mastitis, brucellosis, milk and meat inspection in packing houses, and pasteurization and bacteria count in creameries.

MONTANA

State Society

The fiftieth anniversary convention is scheduled to be held in Billings June 5-7. Speakers will include Byron Lay-

cock, Des Moines, Iowa, and Dorsey A. Hoskins, Kansas City, Mo. A Western parade and other special features will mark the celebration of the anniversary.

Billings

The officers are: President, T. G. Gunderson; vice president, L. A. Crew, and secretary-treasurer, Hewes O. Harris. All are from Billings.

NEW YORK

Central (Third District)

Harry A. Steckel, M.D., spoke at the February dinner meeting in Syracuse concerning electric shock treatment.

City of New York

Charles K. Smith, Elmira, was scheduled to address the meeting February 15 on the subject, "Equivalents in Osteopathic Therapeutics."

Hudson River North (Fifth District)

The officers are: President, John L. Brookman; vice president, T. Paul Davis, and secretary-treasurer, John R. Pike. All are from Albany.

Westchester (Sixth District)

Eugene J. Casey, Binghamton, discussed the relationship of health insurance to the general practitioner at the January meeting in White Plains.

OHIO

Third District Academy (Cleveland)

Guest speaker at the February 6 meeting was Ralph Lindberg, Detroit, who discussed "Diseases of the Biliary Tract" and "Hospital Management."

Eighth and Tenth District Academies (Akron-Canton)

Robert S. Roscoe, Cleveland, addressed a joint meeting February 1.

Ninth District Academy (Warren)

April 13 is the date set for a special meeting with the Ashtabula Academy members invited as guests.

Maurice Kropf, Orrville, spoke at the February meeting about experiences in Ireland. Dr. Kropf recently attended a postgraduate course in obstetrics in Dublin.

"Case Histories of Common Cardiac Cases" is the subject presented by William S. King, Warren, at the January meeting.

Twelfth District Academy (Springfield)

The topics presented at the meeting on February 1 were "Visceral Somatic Reflex Pain" and "Cardiac Emergencies."

OKLAHOMA

Kay County

Wallace A. Laird, Ponca City, was scheduled to present a paper on current methods and types of treatment in the healing art, at a meeting in Tonkawa January 12.

South Central

Cancer was the subject of the meeting January 19 in Chickasha. A film was shown and W. E. Pool, Lindsay, presented a paper.

Southern

The officers are: President, A. Hugh Cockrell, Wilson; president-elect, Frank D. Stickney, Comanche; vice-president, F. Leighton Harmon, Wilson, and secretary-treasurer, Hugh E. Williams (re-elected), Ardmore. Trustee is John J. Herrin, Midell.

Committee chairmen are: Membership and ethics, Dr. Harmon; hospital and clinics, Dr. Stickney; statistics, Richard G. Noble, Durant; program and public relations, Robert H. Safley, Healdton; vocational, Roy B. Waddell, Grandfield; public health, George R. Carey, Comanche, and industrial, D. G. Moore, Fox.

PENNSYLVANIA

District 3

Max Marcus, Allentown, was the speaker at the February meeting in Allentown. Demonstrations and discussions of various manipulative procedures were presented by S. L. Harvey, Easton, William E. Buller, Allentown, and C. Earl Miller and Asa Gordon Walmsley, Bethlehem.

TEXAS

State Society

The program for the convention in Fort Worth, April 27-29, according to an advance announcement, includes "Osteopathic Gynecology," V. Mae Leopold, Odessa; "The Hypoglycemias—an Osteopathic Consideration," "The Allergic State, a New Approach," and "The Destiny of the Osteopathic Profession," George W. Northup, Morristown, N. J.; "Important Aspects of Osteopathic Diagnosis," "Uses and Abuses of Antibiotics in the Management of Eye, Ear, Nose, and Throat Pathologies," and "Office Technic for the General Practitioner," Harold M. Husted, Denver; "The Role of Osteopathic Lesions in Respiratory Disease," "Observations on Weight-Bearing—X-Ray Studies," "Clinical Application of Osteopathic Research," J. S. Denslow, Kirksville, Mo.; "History Taking—by an Osteopathic Physician," "Symptom Analysis," and "Ruling Out Kidney in Gastrointestinal Disease," H. Dale Pearson, Erie, Pa.;

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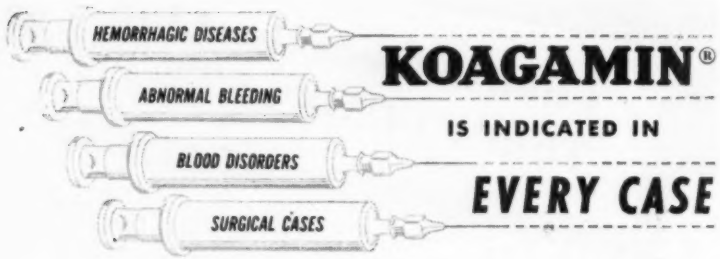

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District 2

The officers are: President, Sherman P. Sparks, Rockwall; president-elect, Charles E. Still, Jr., Dallas; first vice president, Daniel D. Beyer, and secretary-treasurer, Lester L. Hamilton, both of Fort Worth.

Edwin F. Peters, Ph.D., Des Moines, Iowa, was the principal speaker at the meeting of the district in Fort Worth February 12.

District 3

Marille E. Sparks, Dallas, spoke to the East Texas association in Longview, January 22, on proctology for the general practitioner.

District 4

A meeting was held February 19 in San Angelo.

District 6

The quarterly meeting was scheduled for March 5.

District 8

The officers are: President, James M. Tyree, Corpus Christi, and secretary-treasurer, John M. Auten, Ingleside. The chairman of the program committee is Merle Griffin, Corpus Christi.

Dr. Tyree discussed "Low-Back Pain, Its Diagnosis and Treatment" at the meeting February 5 in Welasco.

District 9

J. V. Money, Schulenburg, read a paper on "Distention" at the monthly meeting in Schulenburg January 11.

Dallas County

February 9 the guest speakers were Lige C. Edwards, San Antonio, and Edwin F. Peters, Ph.D., Des Moines, Iowa.

VIRGINIA

State Society

Committee chairmen for the 1950 convention are: General, Leslie R. Luxton, Waynesboro; publicity, Henry S. Liebert, Richmond; local arrangements, Vincent H. Ober, Norfolk; banquet, Felix D. Swope, Washington, D. C.; dates and exhibits, Alfred G. Churchill, Arlington; program, Harold A. Blood, Alexandria, and hospitality, A. H. Bernhard, Richmond.

WISCONSIN

State Society

Speakers at the annual meeting May 4-5 in Milwaukee will be Mr. Harve Lamont Smith, Detroit; Paul E. Kimberly, Des Moines; Ray J. Dennis, Milwaukee, and S. V. Robuck, Chicago.

Fox River Valley

A meeting was held in Oshkosh, March 9.

Madison

The March meeting was scheduled to be held in Monticello.

Milwaukee

A meeting was held March 2.

CANADA

British Columbia

The officers are: President, M. P. Thorpe, Vancouver; vice president, V. B. Taylor, Victoria, and secretary-treasurer, William C. Atkinson, Vancouver. All are re-elected.

SPECIAL AND SPECIALTY GROUPS

ACADEMY OF APPLIED OSTEOPATHY

Speakers at the meeting of the Academy April 3-6 in New York have been announced as Perrin T. Wilson, Cambridge, Mass.; H. V. Hoover, Tacoma, Wash.; George W. Northup, Morristown, N. J., and Angus G. Cathie, Philadelphia.

AMERICAN COLLEGE OF OSTEOPATHIC OBSTETRICIANS AND GYNECOLOGISTS

The officers are: President, Julian L. Mines, III, Long Beach, Calif.; first vice president, Dorothy J. Marsh, Los Angeles; second vice president, Bernard Abel, Toledo, Ohio, and secretary-treasurer, Arthur A. Speir, Merrill, Mich.

The trustees are M. L. Riemann, Kirksville, Mo.; Delle A. Newman, Detroit, and Arthur B. Funnell, Denver.

AMERICAN OSTEOPATHIC SOCIETY OF PROCTOLOGY

According to an advance announcement, the program for the meeting in Houston, Texas, April 3-5, includes "Dr. Davis's Cancer Treatment as Applied to Rectal Cases, A Preliminary Report," presented by Wallace C. Clark, Los An-

geles; "Anatomy of Anorectal Area with Clay Model Demonstrations," Abraham Levin, Philadelphia; "New Approach to the Cancer Problem," R. T. Lustig, Grand Rapids, Mich.; "Bacillary and Amebic Proctosigmoiditis," Lester I. Tavel, Franklin, Tex.; "Pruritus Ani," John Shafer, Denver; "Rectal Reflexes," Earle F. Waters, Salt Lake City; "Colitis As Encountered by the Proctologist," Chester S. Chicky, Saginaw, Mich.; "Pectenosis," Arden M. Price, Kansas City, Mo.; "Chalk Talk on Anorectal Anatomy," Frank D. Stanton, Boston; "Proctologic Significance of Endometriosis," Arthur O. Dudley, Pasadena, Calif.; "Embryology and Histology of the Anorectal Areas," D. LeRoy Green, Kirksville, Mo.; "Proctologic Case Records," George R. Norton, Fort Lauderdale, Fla.; "Institutional Proctology," Lee R. Borg, Los Angeles; "Proctological Problems," M. L. Wirt, Battle Creek, Mich., and "The Requirements for Safer Anesthesia," Philip E. Haviland, Detroit.

CHILD HEALTH CONFERENCE AND CLINIC

(Kansas City, Mo.)

The program announced in advance for the annual meeting April 17-19 includes an open forum lecture, "Heart Diseases of Childhood," presented by Willard E. Bankes, Phoenix, Ariz. Other lectures scheduled for Dr. Bankes are "The Heart in Pediatrics," "Rheumatic Fever in Childhood," and "Operable Congenital Hearts." Leo C. Wagner, Philadelphia, is to speak on "Anoxemia and Cyanosis of the Newborn," "The Osteochondrosis of the Adolescent," and "Diabetes in the Child." Ralph I. McRae, Los Angeles, will talk on "Some Aspects of Handling Child Behavior Problems." A. B. Crites, Kansas City, Mo., will address the group about "Congenital Defects in Children." Speeches to be given by R. P. Morhardt, South Pasadena, Calif., are "Neonatal Death," "Trophoblastic Thesis As It Regards Cancer and Toxemias of Pregnancy," and "The Care of the Dying." F. Munro Purse, Philadelphia, is to discuss "Nutritional Needs of the Adolescent" and "Care of the Premature." C. H. Morgan, Kansas City, Mo., is scheduled to speak on "Thyrotoxicosis in Children," and Herbert D. Ramsay, also of Kansas City, will present "The Treatment of Colic in Infants."

CORTEX CLUB (Denver)

The February programs, the John E. Ramsey Memorial Lectures, consisted of a review of "Pathogenesis of Visceral Disease Following Vertebral Lesions," by Louisa Burns. February 6, C. R. Starks reviewed "General Pathogenesis"; February 13, Harold M. Husted, "Eyes, Nose, and Throat"; February 20, N. E. Atterberry, "Lungs, Heart, Kidneys and Gastrointestinal," and February 27, Harold I. Magoun, "Nervous System, Anomalies, Neoplasms, Summary and Conclusions." These physicians were all from Denver.

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MICHIGAN OSTEOPATHIC SOCIETY OF OBSTETRICIANS AND GYNECOLOGISTS

The officers were reported in the March JOURNAL.

The trustees are Delle A. Newman, Detroit; James G. Matthews, Jr., Highland Park, and Arthur A. Speir, Merrill.

MISSOURI OSTEOPATHIC SOCIETY OF RADIOLOGY

A. G. Reed, Tulsa, Okla., is scheduled to be the speaker at the meeting May 28 in Jefferson City.

NEW JERSEY X-RAY SOCIETY

The officers are: President, J. Armande Porias, Newark; vice president, Bernard J. Plone, Riverside, and secretary-treasurer, S. Samuel Tropea, Pennsauken.

The committee chairmen are: Program, Lewis L. Walter, Atlantic City, and membership, Dr. Tropea.

The charter was received January 8 from the State Society.

State and National Boards

ALABAMA

Examinations June 27-29. Address D. G. Gill, M.D., secretary, Board of Medical Examiners, 519 Dexter Avenue, Montgomery 4.

ALBERTA

Examinations in April in Edmonton. Address Acting Registrar, G. B. Taylor, Office of the Registrar, Edmonton.

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ARIZONA

Basic science examinations June 20 in Tucson. Applications must be filed 2 weeks prior to examination date. Address Francis A. Roy, Ph.D., secretary, Basic Science Board, University of Arizona, Tucson.

ARKANSAS

Basic Science examinations in May. Address L. E. Gebauer, M.D., secretary, Basic Science Board, 701 Main Street, Little Rock.

COLORADO

Professional examinations July 4. Address George H. Gillen, M.D., secretary, Board of Medical Examiners, 831 Republic Bldg., Denver 2.

Basic science examinations May 31, June 1. Applications must be filed on or before May 17. Address Esther B. Starks, D.O., secretary, Basic Science Board, 1459 Ogden St., Denver 3.

CONNECTICUT

Professional examinations July 11. Address H. Wesley Gorham, D.O., secretary, Osteopathic Examining Board, 520 West Avenue, Norwalk.

Basic science examinations June 10. Applications must be filed 2 weeks before examination. Address Miss M. G. Reynolds, Executive Assistant, Board of Healing Arts, 110 Whitney Ave., New Haven 10.

DELAWARE

Examinations July 11-13. Address Joseph McDaniel, M.D., secretary, Board of Medical Examiners, 229 S. State Street, Dover.

FLORIDA

Professional examinations in June in St. Petersburg. Address Richard S. Berry, D.O., secretary, State Board of Osteopathic Medical Examiners, 617-18 Times Bldg., St. Petersburg 5.

Basic science examinations June 3 in Gainesville. Applications must be filed by May 22. Address M. W. Emmel, D.V.M., secretary, Board of Examiners in the Basic Sciences, University of Florida, Gainesville.

GEORGIA

Examinations July 4, in Atlanta. Address R. E. Andrews, D.O., secretary, Board of Osteopathic Examiners, 304 First National Bank Building, Atlanta.

HAWAII

Examinations July 12. Address Mabel A. Runyan, D.O., secretary, Board of Osteopathic Examiners, 2333 C. Kalakaua Avenue, Honolulu 30.

Isabelle Morelock and Mabel Runyan have been appointed to the Board, the appointments expiring in May, 1952.

IDAHO

Examinations June 8 in Boise. Applications must be filed 15 days prior to examination. Address D. W. Hughes, D.O., secretary, Board of Osteopathic Examiners, 203 Noble Bldg., Boise.

ILLINOIS

Examinations June 13-15 in Chicago. Applications must be filed 15 days prior to examination. Address Charles F. Kervin, Superintendent of Registration, Department of Registration and Education, State House, Springfield.

INDIANA

Examinations June 14-16, in Indianapolis. Address Paul R. Tindall, M.D. secretary, Board of Medical Registration and Examination, 20 N. Pike St., Shelbyville.

KANSAS

Examinations June 15-17 at Topeka. Applications must be filed 30 days before the examination. Address Forrest H. Kendall, D.O., secretary, Board of Osteopathic Examination and Registration, 420½ Penn, Holton.

KENTUCKY

Examinations June 14-16 in Louisville. Applications must be filed 10 days prior to examination. Address Miss Ray Wunderlich, Director, Medical Licensure & Registration, State Board of Health, 620 S. Third St., Louisville 2.

MAINE

Examinations June 13, State House, Augusta. Address George Frederick Noel, D.O., secretary, Board of Osteopathic Examination and Registration, Monument Square, Dover-Foxcroft.

MARYLAND

Examinations in June in Baltimore. Applications must be filed by May 31. Address Walter H. Waugaman, D.O., secretary, Board of Osteopathic Examiners, 33 S. Centre St., Cumberland.

MASSACHUSETTS

Examinations July 11. Address George Schadt, M.D., secretary, Board of Registration in Medicine, State House, Boston 33.

MICHIGAN

Professional examinations June 27-29. Address Harry F. Schaffer, D.O., secretary, Board of Osteopathic Registration and Examination, 1375 Penobscot Building, Detroit 26.

Basic Science examinations May 12, 13 at Wayne University, Detroit, and the University of Michigan, Ann Arbor. Applications must be filed before May 1. Address Miss Eloise LeBeau, secretary, Board of Examiners in the Basic Sciences, 101 N. Walnut St., Lansing.

MINNESOTA

Basic science examinations June 6, 7, in Minneapolis. Applications must be filed 1 week before examination. Address Raymond Bieter, M.D., secretary, Board of Examiners in the Basic Sciences, 126 Millard Hall, University of Minnesota, Minneapolis 14.

A. M. Hackleman, Robbinsdale, recently was appointed a member of the Board of Osteopathic Examiners for a 5-year term.

MONTANA

T. G. Gunderson, Billings, is the successor to W. C. Dawes, Billings. THE JOURNAL regrets announcing in March that F. L. Anderson, Miles City, had been appointed to fill Dr. Dawes' unexpired term on the Board.

NEBRASKA

Basic science examinations May 2, 3, University College of Medicine, Omaha. Applications must be filed 15 days prior to examination. Address Mr. Oscar F. Humble, director, Bureau of Examining Boards, State House, Lincoln.

NEVADA

Examinations July 11. Address Walter J. Walker, D.O., secretary, Board of Osteopathic Examiners, 210 W. Second St., Reno.

NEW JERSEY

Examinations June 20. Application must be filed 20 days prior to examination. Address E. S. Hallinger, M.D., secretary, Board of Medical Examiners, 28 W. State Street, Trenton.

Charles A. Furey, D.O., Cape May, has been reappointed to the Board of Medical Examiners.

NEW MEXICO

Basic science examinations May 7. Address Miss Margaret Kilkenny, Assistant Secretary of State, c/o Office of Secretary of State, Santa Fe.

NEW YORK

Examinations June 27-30, Albany, Buffalo, New York, and Syracuse. Applications must be filed 15 days prior to examination. Address Jacob L. Lochner, Jr., M.D., secretary, Board of Medical Examiners, State Department of Education, 23 S. Pearl Street, Albany 7.

NORTH DAKOTA

Examinations July 4. Address M. M. Kemble, D.O., secretary, Board of Osteopathic Examiners, 6-10 Kresge Block, Minot.

OHIO

Examinations June 14-17 in Columbus. Applications must be filed 10 days prior to examination. Address H. M. Platter, M.D., secretary, Medical Board, 21 W. Broad St., Columbus 15.

OREGON

Professional examinations in July. The Board of Medical Examiners will meet April 28, 29 to interview applicants for licensure. Address Mr. Howard I. Bobbitt, executive secretary, 608 Failing Bldg., Portland.

Basic science examinations June 17. Address Charles D. Byrne, Ph.D., secretary, Board of Higher Education, Eugene.

RHODE ISLAND

Professional examinations July 6. Basic science examinations May 10, for which applications must be filed before April 30. Address Mr. Thomas B. Casey, Administrator of Professional Regulations, 366 State Office Bldg., Providence.

SOUTH CAROLINA

Examinations June 20 at Columbia. Applications must be filed 15 days prior to examination. Address E. W. Pratt, D.O., Board of Osteopathic Examiners, 6 Glebe St., Charleston 6.

SOUTH DAKOTA

Basic science examinations the first week in June. Address Gregg M. Evans, Ph.D., secretary, Basic Science Board, Yankton College, Yankton.

TENNESSEE

Professional examinations in July in Nashville. Address M. E. Coy, D.O., secretary, Board of Examination and Registration for Osteopathic Physicians, 1226 Highland Avenue, Jackson.

Basic science examinations July 7, 8 in Memphis. Address O. W. Hyman,

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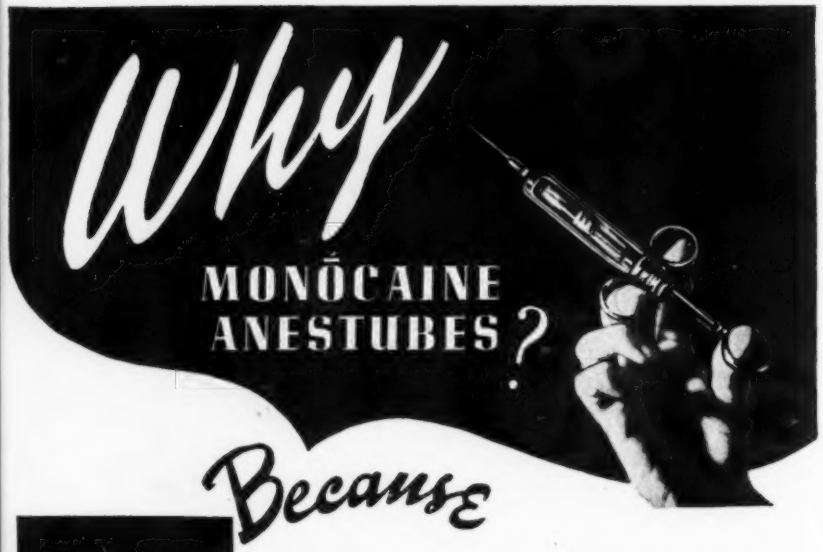

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Basic science examinations April 21, 22 in Austin. Address Brother Raphael Wilson, secretary, Board of Examiners in the Basic Sciences, St. Edwards University, Austin.

VERMONT

Examinations June 21, 22 in the office of Howard I. Slocum, D.O., Room 34, Battell Block, Middlebury. Application must be filed by June 1. Address Charles D. Beale, D.O., secretary, Board of Osteopathic Examination and Registration, Mead Bldg., Rutland.

VIRGINIA

Examinations June 23, 24, Richmond Hotel, Richmond. Applications must be filed 10 days prior to examination. Address K. D. Graves, M.D., secretary, Board of Medical Examiners, 631 First St., S. W., Roanoke.

WASHINGTON

Professional examinations in July. Address Mr. George C. Starlund, acting director, Department of Licenses, Olympia.

Basic science examinations in July in Seattle. Address Mr. Edward C. Dohm, Department of Licenses, Olympia.

WEST VIRGINIA

Examinations June 21, 22 at the Daniel Boone Hotel, Charleston. Applications must be filed 10 days prior to the examination. Address T. H. Lacey, D.O., secretary, Board of Osteopathy, 711½ Market Street, Parkersburg.

WISCONSIN

Professional examinations June 27 at Milwaukee. Address C. A. Dawson, M.D., secretary, Board of Medical Examiners, River Falls.

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May 1—Washington, $2.00. Address Mr. George C. Starlund, acting director, State Department of Licenses, Olympia.

Before June 30—Delaware, $10.00. Address Joseph McDaniel, M.D., secretary, Board of Medical Examiners, 229 S. State Street, Dover.

June 30—Virginia, $1.00. Address K. D. Graves, M.D., secretary, Board of Medical Examiners, 631 First Street, S. W., Roanoke.

EXAMINATIONS BY NATIONAL BOARD

The National Board of Examiners for Osteopathic Physicians and Surgeons conducts Parts I and II of its examination on the first Thursday and Friday of each May and December at the six approved colleges. Application blanks may be obtained from the secretary, and the completed application blank together with a passport photograph and check for the part or parts to be taken, must be in the Secretary's office by the November 15, or April 15 preceding examination. Part III of the examination will be given in specific locations at the discretion of the Board for the convenience of the applicant.

Examinations in Part I consist of anatomy, physiology, pathology, chemistry, and bacteriology. Part II consists of examination in mental diseases, surgery, obstetrics and gynecology, pediatrics, public health, osteopathic theory and practice. Part III is an oral examination.

Address Paul van B. Allen, D.O., acting secretary, 1500 N. Delaware Street, Indianapolis 2, Indiana.

1949 REPORT OF UNITED STATES PUBLIC HEALTH SERVICE

A half century of public health progress in life saving and disease control gives great hope of success in curbing the chief killing and disabling conditions of the century, according to the 1949 report of the Public Health Service, made public February 23 by Federal Security Administrator Oscar R. Ewing.

The advances which have brought about better health and longer life, Surgeon General Leonard A. Scheele points out in the report, result from the application of scientific findings to the health care of the people, from more health services and hospitals, and from wider use of the services available. As a by-product of this progress, however, different and continually changing health problems have arisen. Among these, the chronic diseases are the most outstanding.

Quoting from the vital statistics record, the most reliable measure of the Nation's health progress and problems, the report states that 3.7 million babies were born in the calendar year 1948, the next largest number the Nation has ever produced in one year. The general death rate was the lowest on record—9.9 per 1,000 population. Marriages numbered nearly 2,000,000 couples, or 12 per 1,000 population, and divorces totalled 415,000, or 3 per 1,000 population.

The constant decline in the death rate over the past fifty years can be attributed to the reduction in deaths from communicable diseases, the report says. Striking reductions, for example, are still being recorded in death rates from pneumonia and influenza and from tuberculosis. These diseases were the leading causes of death at the turn of the century. Today, they are sixth and seventh respectively. Since 1940, the pneumonia-influenza death rate has declined by 46 per cent (38 per 100,000 population in 1948). The tuberculosis death rate in 1948 was the lowest on record—30 per 100,000 population.

Infant mortality in the United States reached a new low in 1948—31.8 deaths per 1,000 live births. Although infant mortality has been cut by more than two-thirds in the last thirty years, the savings have been chiefly among full term babies after the first month. Premature birth is still among the ten leading causes of death.

In the eighteen month period—January 1948 to July 1949—only two diseases, poliomyelitis and measles, reached epidemic proportions, according to the report. During the calendar year of 1948, 16 million patients received bed-care in hospitals. Reports for the year just closed show that about 14,000,000 persons had chest x-rays, and more than 2 million visited their health departments to be examined for venereal disease.

As a result of the success which has been achieved in prolonging life, the average life expectancy of a child born today is 67 years, the report states. More than a quarter of the population now is 45 years of age or older, and ten years hence, one-third of all Americans will be in the middle and older age brackets. This aging population places emphasis on the changing picture of health and highlights the areas in which public health must strengthen its efforts. Heart disease, cancer, and cerebral hemorrhage are the three leading causes of death in the United States. Deaths from these causes are concentrated chiefly in the older age groups. Deaths from heart disease and cancer have increased enormously and steadily since the turn of the century, and these two causes alone now account for nearly one-half of all deaths. Mental disease, probably, is the country's leading cause of ill health and disability.

Doctor Scheele pointed out that over the years in which the chronic diseases, accidents and mental disease have been on the increase, the physical environment has been changing rapidly. Today, housing conditions in many parts of the country are causing much mental and physical ill health. Cities and industries produce enormous quantities of waste that pollute the air, the streams and the rivers. World health grows constantly in importance as nations come together more closely through rapid travel.

For activities directed toward the solution of the Nation's health problems, the appropriations and contractual authorizations by the Public Health Service in the 1949 fiscal year totalled $237 millions. Sixty per cent of this amount was expended in grants-in-aid both to States and communities for general pub-

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lic health activity and the construction of hospital facilities, and to institutions and individual scientists for the conduct of research. Forty per cent went for direct operations of which 15 per cent was devoted to the construction of the new clinical research center. Other direct operations included research conducted within the Service, operation of Marine hospitals and stations where legal beneficiaries of the Service received medical care, and technical assistance to the States. As of July 1, 1949, the Public Health Service had on its rolls 17,000 full time and 5,000 part time employees.

During the year, a thoroughgoing reorganization of the Service took place to permit the organization to keep pace administratively with rapid developments in the concept of public health and with current advances in public health practice, the report states. The reorganization regroups the various activities of the Service within the framework of the four previously existing bureaus so that closely related programs are brought together in a single overall administrative unit. Administrative responsibilities have been grouped within one bureau. Within the three operating bureaus have been coordinated (1) medical research, (2) clinical medicine, and (3) public health.

Among the medical research accomplishments at the National Institutes of Health, research bureau of the Service, was the discovery of means to conduct basic research on eclampsia, a disease of pregnancy which had baffled the medical profession for centuries. Scientists at the Institutes also developed a method for large-scale inexpensive production of amino acids, used in the intravenous feeding of patients with cancer of the stomach and other obstructions of the gastro-intestinal tract. Basic studies of a wide variety of infections, such as poliomyelitis, rabies, Q fever and brucellosis have contributed to the development of more effective methods for the prevention, diagnosis and treatment of communicable diseases. A new lead was discovered toward understanding how blood is formed, and another toward the development of protection against peptic ulcer. Excellent promise also was obtained for improvements in present means of preventing and treating whooping cough. Research activities were strengthened in the fields of cancer, heart disease, tropical diseases, physical biology and biologics control.

The Public Health Service program of financial aid to scientists in universities, medical schools and hospitals also has produced new medical knowledge, according to the report. At the close of the year, 1,300 research projects were being aided. These projects are being carried on in more than 200 institutions, located in forty-four states and the District of Columbia. Four hundred and thirty-seven research fellows received help in 97 institutions in 30 States.

Construction proceeded on the Clinical Center at Bethesda, Maryland. This Center, scheduled for completion in 1952, will add 500 beds and many more laboratories to the Nation's resources for medical research.

The report contains a statistical breakdown of Public Health Service activity in the practice of medicine, major concern of the Bureau of Medical Services. The Bureau is concerned with the provision of complete care for beneficiaries of the Service and with assistance to other organizations in the development of medical, dental, nursing and hospital services.

In the past year, more than 80,000 patients were admitted to the twenty-one general Marine hospitals and the two tuberculosis hospitals operated by the Public Health Service. Three other hospitals operated by the Service are the National Leprosarium at Carville, La., and two psychiatric hospitals, one at Lexington, Ky., and the other at Fort Worth, Texas.

In addition to the general hospitals, which also conduct out-patient departments, the Service operates four large clinics in New York City, Washington, D. C., Philadelphia and Los Angeles. These out-patient services cared for 443,300 individuals during the 1949 fiscal year, the report says.

At Freedmen's Hospital, which is the teaching hospital of Howard University, Washington, D. C., and supervised by the Public Health Service, 10,089 in-patients were treated during the year. In the annex for the treatment of patients with tuberculosis, the average length of stay was 296 days. The thirty-

three outpatient clinics of the hospital treated an average of 271 patients per day during the year.

Under the hospital planning and construction program at the end of the year, thirty-five new institutions were in operation, and 355 were being built. Five hundred others were approved for funds but are not yet under construction. Federal funds approved for construction during the two years of operation of the program, as of June 30, 1949, amounted to $150 million. This Federal aid represents a total construction of 38,172 hospital beds at an estimated total cost slightly under one-half billion dollars, according to the report.

Federal-State and interstate programs, carried on by the Bureau of State Services, fall generally into three categories: (1) auxiliary services which State and local agencies depend upon, such as vital statistics, health education, public health nursing and the grant-in-aid system; (2) environmental health services which aim to control all the external forces and factors adversely affecting human health; (3) personal health services, which aim to control communicable and chronic diseases and to promote family health.

For the fiscal year 1949, certified payments to the States and the Territories under the grant programs authorized by the Public Health Act of 1944, as amended, totalled $47 million. Of this amount, $11.2 million was for general health work; $8.6 million for venereal disease control; $6.7 million for tuberculosis control, and $3 million for mental health activities. In addition, $2.3 million was paid to States for cancer control work. Forty-two States received $4.1 million for the Federal share in the costs of operation and maintenance of venereal disease and rapid treatment facilities. Payments totalling $365,000 were certified to 31 States for venereal disease case finding programs.

On June 30, 1949, there were 1,291 full-time health units actually giving local service to 1,648 counties and 273 separate cities. There were also 51 State health districts, organized primarily to give supervision and advice to 362 counties. These figures represent a slight increase over 1948, and a great improvement over 1936 when grants-in-aid for general health services were started.

The Service's epidemic and disaster service to State and local health agencies is rendered by the Communicable Disease Center, with headquarters in Atlanta, Ga. This Center is the "combat division" against infectious diseases.

Among the most successful activities of this center has been its battle against malaria. Since 1945, Congress has appropriated an average of about $9 million annually to help wipe out this disease. Before the war, it was estimated that malaria cost the country approximately one-half billion dollars annually in lost production in the 17 Southern States alone. Probably the total amounts spent by the Public Health Service, the States and the communities in this last knock-out campaign will not exceed $100 million. When that figure is contrasted with the annual economic loss of five times that sum, there appears to be definite proof that eradication costs less than half-way measures.

In the field of world health, the Public Health Service and its personnel have been active in the World Health Organization since its inception. The Surgeon General of the Service served as president of the first conference in 1946, and, following the first World Health Assembly in 1948, the President appointed a Public Health Service officer as a member of the executive board. The Second World Health Assembly met in Rome from June 13 to July 2. Fifty-four of the 64 member states were represented. The United States was elected to the Executive Board for a term of three years, with the highest vote received by any country. A regular budget of $7,000,000 for 1950 was voted.

In the World Health Program for 1950, the most urgent need of a great many countries is for properly trained personnel. It is expected that some 550 fellowships will be granted during 1950. The recipients will be trained as far as possible in countries where conditions are not too unlike those that they will meet in their own work.

A supplementary budget of some $10 million, based on voluntary contributions by governments was also voted. The most important item in this budget is the establishment of demonstration areas in underdeveloped countries. As economic benefits are bound to be many times the outlay, it is hoped that a chain reaction will be established, spreading the benefits of modern public health methods to the whole country.

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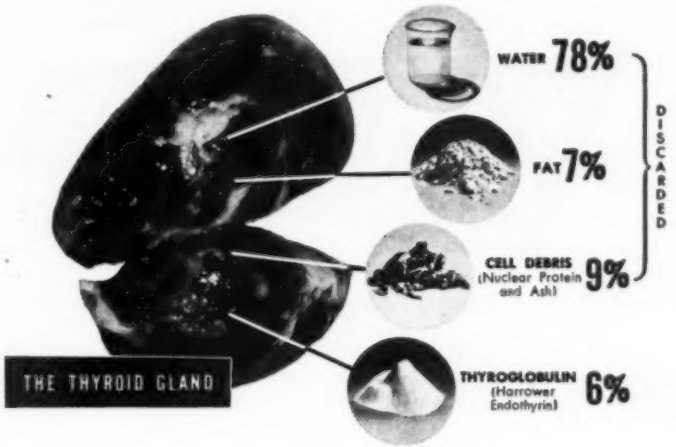

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*Derzavis, J. L.; Rice, J. S., and Leland, L. S.: Topical Bacitracin Therapy of Pyogenic Dermatoses; a Clinical Report, J.A.M.A. *141*:191 (Sept. 17) 1949.

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WHAT IS "Q" FEVER?*

By Dr. Georges Blanc

of the Pasteur Institute in Morocco and member of a WHO expert group on pestilential diseases.

The pestilential diseases studied by the expert group to which I belong include plague, cholera, typhus and others. To this list we have added "Q" fever, a little-known infection which is assuming growing importance in the group of infectious pulmonary diseases.

Knowledge of this disease has been acquired in three stages. It may help us in describing them if we think of a triptych by an old painter with its central and two lateral panels.

*Reprinted from WHO Newsletter, May, 1949.

In the central panel we see the following picture:

Queensland fever in 1935 is described by Derrick and Burnet, two Australian scientists. The infection is of the influenza type and is prevalent among slaughter-house workers and stock-breeders.

In a series of remarkable studies, Derrick and Burnet reveal the full cycle of the disease. Certain rodents, they find, are normally infected; and on the rodents there are infected ticks. These ticks do not bite man but may bite domestic animals, sheep or cattle, and infect them with the disease. The virus is then transmitted to the animals' ticks. It is a species of Rickettsia; that is, a parasite similar to the typhus parasite. It multiplies rapidly in the tick's intestine and is excreted, thus mixing with the dust which is abundant on the skin of cattle. This dust is airborne and infects slaughter-house workers through the mucous membranes of eyes, nose and throat.

Queensland fever thus seems an infection limited to a particular group of individuals. Although of great scientific interest, it does not appear to have any general social importance. The discoveries of Derrick and Burnet are corroborated in America and Morocco. . . .

Suddenly we find "Q" fever appearing in a new guise; and here we come to the right-hand panel of the triptych:

During the war a serious influenza epidemic is raging in Athens in 1944 among the civilian population and German troops alike. The disease takes a special form, lasting longer than classical influenza and being invariably accompanied by pulmonary disorders. The virus of this Balkan type of influenza is isolated from the blood of patients, and is subsequently detected among sick American and British troops in Italy. The virus is identified and found to be that of Queensland fever. A laboratory disease thus becomes an infection of menacing proportions, capable of being passed directly from man to man like influenza. . . .

Let us now look at the left-hand panel. Here it is in broad outline:

Very recent investigations and experiments show "Q" fever in still another light. It is observed that slaughter-house epidemics in the United States spread to dairy workers having no direct contact with the animals. Cattle become easily infected, and in the case of dairy cows the virus can remain in milk for months. Calves feeding on this milk are infected. Thus milk becomes a new source of disease, infecting both men and animals without the aid of parasites. The same observations and the same experiments are made in Greece regarding goats, from which comes the country's main milk supply. During the entire lactation period, the milk of infected goats remains dangerous and can infect young goats as well as man. . . .

Thus the picture stands today.

A disease originating in rodents and ticks can be transmitted to man. In some cases domestic animals may become a direct source of infection for people. These results, obtained through the great interest shown in the investigation of "Q" fever, would seem to indicate that the disease is spreading. This increase may, however, be only apparent and due simply to the fact that the nature of the infection is now more clearly understood. Recent research work makes it possible to state that this epidemic disease can be combatted by vaccination.

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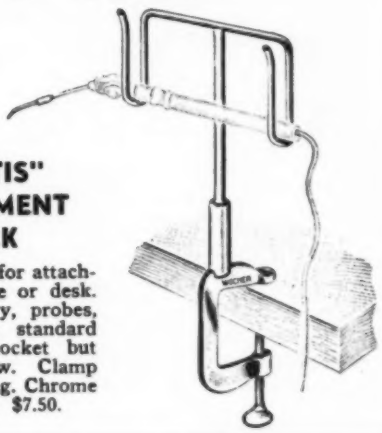

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Anderson, Victoria, from The Ryan Hotel, to Bethesda Invalid Home, Ninth & Wacouta St., St. Paul 1, Minn.

Barr, C. Henry, from Detroit, Mich., to Hustisford Hospital & Clinic, Hustisford, Wis.

Bennett, Frank M., from Cleveland, Ohio, to 1832 Wooster Road, Rocky River 16, Ohio

Bracker, Frederick A., from 1316 Del Paso Blvd., to 201 Hawthorne Ave., North Sacramento 15, Calif.

Braunschweig, Henry J., from 1251 Ure St., to 1532 E. Grand Ave., Des Moines 16, Iowa

Bryan, George E., from Comanche, Okla., to Hinton Community Hospital, Hinton, Okla.

Callison, C. P., from Corpus Christi, Texas, to 940 Jefferson St., Kerrville, Texas

Cheatham, Riley F., KCOS '50; Portland Osteopathic Hospital, 616 N. W. 18th St., Portland 9, Ore.

Clapp, Robert C., from Alamagordo, N. Mex., to Box 326, West Burlington, Iowa

Collins, Bernard S., KCOS '50; Mullens, W. Va.

Denise, Richard, from Philadelphia, Pa., to 720-22 Sixth Ave., Des Moines 9, Iowa

Diebold, Wendell, from Melbourne, Fla., to Box 151, Federal Station, Portland 7, Ore.

Drost, James M., from 330 Main St., to Box 167, Delta, Colo.

Eagon, George W., from Denver, Colo., to 827 Morgan Bldg., Portland 5, Ore.

Eaton, William K., Jr., from 1450 Del Paso Blvd., to 201 Hawthorne Ave., North Sacramento 15, Calif.

Eberly, Russell N., from 236 W. Harvey St., to 5352 N. Broad St., Philadelphia 41, Pa.

Fairbanks, D. Webster, from 1550 Lincoln St., to 5108 W. 38th Ave., Denver 12, Colo.

Fleming, Fred B., from Montrose, Colo., to Route 1, Box 372, Encinitas, Calif.

Foley, Walter K., from Eau Gallie, Fla., to 12213 N. W. Seventh Ave., Miami 38, Fla.

Forbes, William W., from Oklahoma City, Okla., to 106 S. Washington, Carterville, Mo.

Fox, John H., from 336 E. Thomas Road, to 711 E. McDowell Road, Phoenix, Ariz.

Fredeking, Monroe D., from Hubbard, Texas, to De Leon Clinical Hospital, Box 182, De Leon, Texas

Gallardo, O. Pierre, from 228 W. Fourth St., to El Santo Nino Emergency Hospital, 2256 Whittier Blvd., Los Angeles 23, Calif.

Gamble, Mary E., from 1153 E. Seventh St., to 3627 E. Fourth St., Long Beach 4, Calif.

Glass, Ruth McNeff, from 834-5 Forsyth Bldg., to 565 Lee St., S. W., Atlanta, Ga.

Godat, Helen Terhuwen, from 107 33rd Ave., N., to 1922 Broadway, Nashville 4, Tenn.

Gremm, Maryellen R., from Houston, Texas, to Box 8, Waelder, Texas

Harnish, E. Thomas, CCO '49; 4244 Livernois Ave., Detroit 10, Mich.

Hayman, Hazel Coley, from 8 W. 13th St., to 30 Fifth Ave., New York 11, N. Y.

Humphrey, Rollin A., KCOS '50; Gribble Bldg., West Union, W. Va.

Kearl, Lowell W., from 5064 Caspar Ave., to 2352 Colorado Blvd., Los Angeles 41, Calif.

Keef, J. Clement, Sr., KC '49; Dallas General Hospital, 5003 Ross Ave., Dallas 6, Texas

King, O. Van Meter, from 4004 Orange St., to 4065 Seventh St., Riverside, Calif.

Kitchen, Neil R., from Phoenix, Ariz., to Detroit Osteopathic Hospital, 12523 Third Ave., Detroit 3, Mich.

Kittredge, James H., from 2618½ Crenshaw Blvd., to 5225 Wilshire Blvd., Los Angeles 36, Calif.

Latos, Harry, from Highland Park, Mich., to 40 E. Nine Mile Road, Hazel Park, Mich.

Latos, Mary Lindner, from Highland Park, Mich., to 40 E. Nine Mile Road, Hazel Park, Mich.

MacDonald, Ernest R., from 1209 St. Paul St., to 311 Cathedral St., Baltimore 1, Md.

Maczulski, Bohdan A., from 155 Highland Ave., to 15141 Plymouth Road, Detroit 27, Mich.

McBride, Newton E., from Phoenix, Ariz., to St. Johns, Ariz.

McDowell, Henry L., from Long Beach, Calif., to 13425 San Antonio Drive, Norwalk, Calif.

McEwen, Calvin E., from Los Angeles, Calif., to 353 E. Broadway, Long Beach 2, Calif.

McGill, Richard O., from 31 E. McDowell Road, to North Seventh Street Clinic, 4004 N. Seventh St., Phoenix, Ariz.

McMurray, Robert L., from Toronto, Ohio, to Box 843, Buckeye Lake, Ohio

Mellott, James K., from Bangor, Maine, to 21 N. Main St., Brewer, Maine

Messham, Richard H., KCOS '50; Laughlin Hospital, 711-15 W. Jefferson St., Kirksville, Mo.

Meyer, Sherman W., from 31 E. McDowell Road, to North Seventh Street Clinic, 4004 N. Seventh St., Phoenix, Ariz.

Mill, Walter C., DMS '50; Rocky Mountain Osteopathic Hospital, 2221 Downing St., Denver 5, Colo.

Morrill, William J., from 515 Eighth St., to 709 Sixth Ave., Huntington 1, W. Va.

Neifield, Martin S., from 2034 Chelten Ave., to 2083 E. Chelten Ave., Philadelphia 38, Pa.

Newland, Chester G., from Stroud, Okla., to Box 755, Erick, Okla.

Norton, Charles K., from 1213 E. Second St., to 111 Royal Ave., Royal Oak, Mich.

Nunn, L. Robert, from South Gate, Calif., to 12416 Santa Monica Blvd., Los Angeles 25, Calif.

O'Meara, Mary, from 1445 Pacific, to Security-First Natl. Bank Bldg., Redlands, Calif.

Peterson, Walter D., from Highland Park, Mich., to Riverside Osteopathic Hospital, 165 George St., Trenton, Mich.

Pettycrew, L. William, from Janes & Jefferson, to 1205 N. Michigan Ave., Saginaw, Mich.

Quartel, H. Ward, from 319 Claranna Ave., to Talbott Bldg., 131 N. Ludlow St., Dayton 2, Ohio

Richards, Llewellyn, from Los Angeles, Calif., to Box 7, Perris, Calif.

Roberts, Kenneth M., from Albuquerque, N. Mex., to Box 694, Aztec, N. Mex.

Ryan, Earl A., from 607 Heartwell Bldg., to 350 E. Market St., Long Beach 5, Calif.

Schenck, Koenia W., from 318½ Main, to 117 W. Fourth St., Clovis, N. Mex.

Schurr, Kenneth E., from Joplin, Mo., to Young Clinic & Hospital, Box 328, Alva, Okla.

Seelye, Robert L., from Mecosta, Mich., to 1708 W. Main St., Lansing 15, Mich.

Shannon, Emerson G., KCOS '50; Oceana, W. Va.

Shapiro, Robert, from Toledo, Ohio, to 1202 N. 60th St., Philadelphia 31, Pa.

Shuman, John T., from Cottonwood, Ariz., to Hawk Point, Mo.

Stack, E. William, from 205½ E. Front St., to 115 Wellington St., Traverse City, Mich.

Stewart, James A., from Alex, Okla., to 104 S. Robinson St., Oklahoma City 2, Okla.

Stoike, E. J., from Babcock Bldg., to 133 W. Bridge St., Austin, Minn.

Stone, Jerome B., from North Hollywood, Calif., to Edcouch, Texas

Strangio, Vincent J., KCOS '50; K.C.O.S. Hospital, Kirksville, Mo.

Styles, Albert T., from 4300a Manchester Ave., to 8818 Gravois Road, Affton, St. Louis 23, Mo.

Summers, Chester C., from Houston, Texas, to 1914 N. Chadbourne, San Angelo, Texas

Swift, Alice Aline, from Lancaster, Pa., to Osteopathic Hospital of Philadelphia, 48th & Spruce Sts., Philadelphia 39, Pa.

Teplitz, Raymond L., from 2218 Sheridan St., to 3814 W. Adams Blvd., Los Angeles 16, Calif.

Trendle, Raymond F., from Long Beach, Calif., to 13425 San Antonio Drive, Norwalk, Calif.

Turowski, Jacek F., CCO '49; Bay View Hospital, 23200 Lake Road, Bay Village, Ohio

Vick, Robert L., from Tulia, Texas, to 107 E. Sixth St., Clovis, N. Mex.

von Lohr, Morgan W., from Troy, Ohio, to Detroit Osteopathic Hospital, 12523 Third Ave., Detroit 3, Mich.

Walker, Alfred J., from Waldo General Hospital, to 610 E. 165th St., Seattle 55, Wash.

Wicks, Howard, KCOS '50; 1240 Penn Ave., Des Moines 16, Iowa

Willems, M. B., from Inman, Kans., to 329 S. McCollough St., Pretty Prairie, Kans.

Wisniewski, R. M., from 153 S. Central Ave., to 156 E. Seminary St., Richland Center, Wis.

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January 27, 1950

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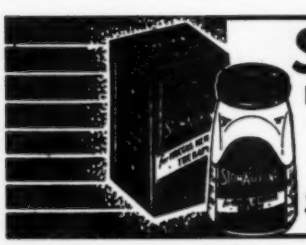
Mill, Walter C.



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Books Received

UROLOGICAL SURGERY. By Austin Ingram Dodson, M.D., F.A.C.S., Richmond, Virginia, Professor of Urology, Medical College of Virginia; Urologist to the Hospital Division, Medical College of Virginia; Urologist to Crippled Children's Hospital, Urologist to St. Elizabeth's Hospital; Urologist to St. Luke's Hospital and McGuire Clinic. Ed. 2. Cloth. Pp. 856, with illustrations. Price $13.50. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1950.

MEDICINE OF THE YEAR, 1950. Under editorial direction of John B. Youmans, M.D., Dean, School of Medicine, Vanderbilt University. Cloth. Pp. 204. Price $5.00. J. B. Lippincott Company, East Washington Square, Philadelphia, 1950.

CURRENT THERAPY, 1950. Editor: Howard F. Conn, M.D.; Consulting Editors: M. Edward Davis, Vincent J. Derbes, Garfield G. Duncan, Hugh J. Jewett, William J. Kerr, Perrin H. Long, H. Houston Merritt, Paul A. O'Leary, Walter L. Palmer, Hobart A. Reimann, Cyrus C. Sturgis, Robert H. Williams. Cloth. Pp. 736. Price $10.00. W. B. Saunders Company, West Washington Square, Philadelphia, 1950.

MEDICAL MANAGEMENT OF GASTRO-INTESTINAL DISORDERS. By Garnett Cheney, M.D., Clinical Professor of Medicine, Stanford University Medical School. Cloth. Pp. 478, with illustrations. Price $6.75. Year Book Publishers, Inc., 200 E. Illinois St., Chicago 11, 1950.

THE COMMON INFECTIOUS DISEASES. By H. Stanley Banks, M.A., M.D. (Glas.), F.R.C.P. (Lond.), D.P.H. (Cantab.), Physician-Superintendent, Park Hospital, Hither Green, London: Lecturer in Infectious Diseases, the Medical College, St. Bartholomew's Hospital, University of London. Formerly Medical Superintendent, City of Leicester Isolation Hospital and Sanatorium, and Medical Officer of Health, Motherwell and Wishaw, Milroy Lecturer, Royal College of Physicians, London, 1945. Cloth. Pp. 354, with illustrations. Price $4.50. The Williams & Wilkins Company, Mt. Royal and Guilford Aves., Baltimore, 1949.

THE CYTOLOGIC DIAGNOSIS OF CANCER. By The Staff of the Vincent Memorial Laboratory of the Vincent Memorial Hospital. A Gynecologic Service Affiliated with the Massachusetts General Hospital, Boston, Massachusetts. The Department of Gynecology Harvard Medical School. Published under the Sponsorship of The American Cancer Society. Cloth. Pp. 229, with illustrations. Price $6.50. W. B. Saunders Company, West Washington Square, Philadelphia, 1950.

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FUNDAMENTALS OF CHEMISTRY AND APPLICATIONS. By Charlotte A. Francis, A.M., Formerly, Instructor in Chemistry, Teachers College, Columbia University, and Edna C. Morse, R.N., A.M., Ed.D., Assistant Professor of Home Economics (Chemistry), Teachers College, Columbia University; Formerly, Instructor, New England Baptist Hospital Training School for Nurses. Ed. 3. Cloth. Pp. 546, with illustrations. Price $4.50. The Macmillan Company, 60 Fifth Avenue, New York, 1950.

BRIDGES' FOOD AND BEVERAGE ANALYSES. By Marjorie R. Mattice, A.B., Sc.M., Assistant Professor of Biochemistry, Graduate School of Medicine, College of Medical Evangelists, Los Angeles, California; Formerly Assistant Professor of Pathological Chemistry, Department of Medicine, New York Post-Graduate Medical School, Columbia University; Chief Chemist, New York Post-Graduate Hospital; Consultant Chemist, Department of Correction Hospitals, City of New York. Ed. 3. Cloth. Pp. 412, with illustrations. Price $5.50. Lea & Febiger, Washington Square, Philadelphia 6, 1950.

OCCUPATIONAL THERAPY. Edited by William Rush Dunton, Jr., M.D., Founder and Former Editor Occupational Therapy and Rehabilitation, and Sidney Light, M.D., Editor, Occupational Therapy and Rehabilitation. Cloth. Pp. 321, with illustrations. Price $6.00. Charles C Thomas, Publisher, 301-327 East Lawrence Avenue, Springfield, Ill., 1950.

POSTGRADUATE GASTROENTEROLOGY. Edited by Henry L. Bockus, M.D., Professor of Gastroenterology, University of Pennsylvania Graduate School of Medicine. Cloth. Pp. 670, with illustrations. Price $10.00. W. B. Saunders Company, West Washington Square, Philadelphia, 1950.

REHABILITATION, RE-EDUCATION AND REMEDIAL EXERCISES. By Olive F. Guthrie Smith, M.B.E., F.C.S.P. (Hon.), T.M.G., Formerly Principal of the Swedish Institute, London, and of the Physical Exercise Department, St. Mary's Hospital, London, W. 2, Vice-President of the Chartered Society of Physiotherapy. Ed. 2. Cloth. Pp. 456, with illustrations. Price $6.00. The Williams & Wilkins Company, Mt. Royal & Guilford Aves., Baltimore, 1949.

RESEARCH IN MEDICAL SCIENCE. Edited by David E. Green, Ph.D., and W. Eugene Knox, M.D. Cloth. Pp. 492, with illustrations. Price $6.50. The Macmillan Company, 60 Fifth Avenue, New York 11, 1950.

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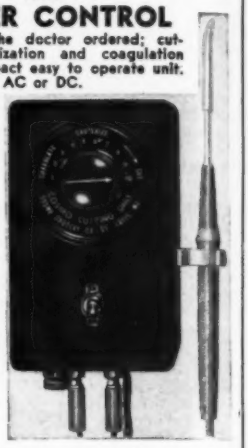

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DEATH RATE FOR ACCIDENTS

The death rate for accidents decreased to 67.1 deaths per 100,000 population in the United States in 1948 from the rate of 69.4 for the previous year, Federal Security Administrator Oscar R. Ewing announced February 7. Declines in death rates for both motor-vehicle accidents and other accidents contributed to the decrease.

The rate for motor-vehicle accidents was 22.1 in 1948 as compared with 22.8 in 1947. The year 1948 continued the decline from the post-war peak of 23.9 in 1946. A continuation of the downward movement in 1949 is indicated by the data for the first 10 months of the year. For other accidents the death rate decreased from 46.6 in 1947 to 45.0 in 1948, a drop of 4.4 per cent. During the first 10 months of 1949 it decreased further according to a 10-percent sample of death certificates tabulated by the Public Health Service.

Accidents took a toll of 98,001 lives in 1948 as compared with 99,579 in the previous year. Motor-vehicle accidents caused 32,259 of the total while other accidents claimed 65,742 lives. Falls accounted for more deaths than any other kind of accident, except motor vehicles. They killed 24,266 persons in 1948. The death rate for falls was 16.6 per 100,000 population, which was just under the rate of 16.7 for 1947. At least three-quarters of the falls which terminated fatally occurred in the home. Drowning was third on the list in 1948 as in 1947, claiming 5,299 lives. The death rate for drowning was 3.6 in 1948, or 10 per cent lower than in 1947. Burns and conflagrations are fourth and fifth, respectively, on the list. These two types of accidents, which are of importance as hazards in the home, caused a total of 7,668 deaths. The death rate for burns was 3.1 and that for conflagrations 2.1 per 100,000 population.

Railway accidents caused 1.7 deaths per 100,000. Air-transport accidents were responsible for 1.3 deaths per 100,000 population. Both of these rates are lower than those recorded in 1947 when the rate for railway accidents was 1.9 and that for air-transport was 1.4. These rates are based on the population of the United States, since the number of miles of travel are not available from vital statistics sources. They include deaths of passengers and others killed by those vehicles.

More than twice as many men as women were killed by accidents in 1948. There were 67,082 men killed as compared with 30,919 women. The death rates were 92.5 per 100,000 for men and 42.0 for women.

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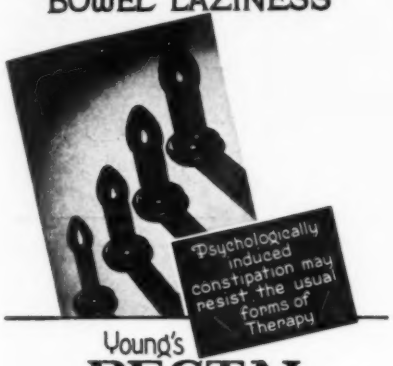

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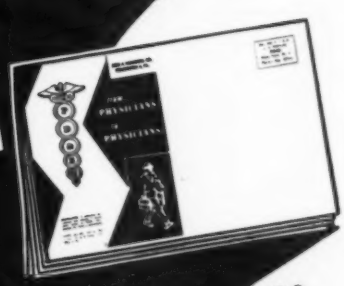

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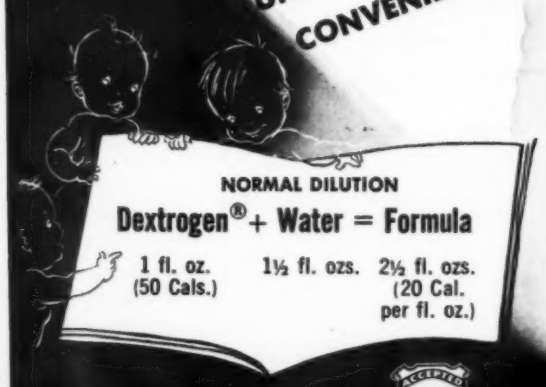

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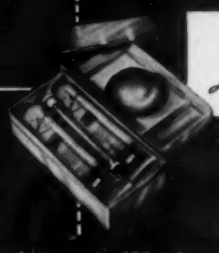

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